Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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Published by PRACTICAL PUBLICATIONS, INC., 802 Wulsin Bldg., Indianapolis, Ind.

Eastern Representative	Western Representative	Missouri Representative
C. A. Larson	H. L. Watrous	G. H. Dirhold
254 West 31st St.	550 Wrigley Bldg.	615 Star Bldg.
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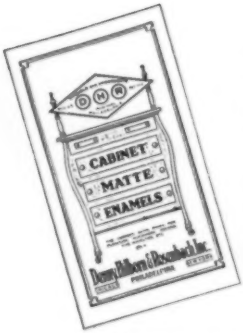
NO BLUSH **NO BLOOM**

The Same Leadership In Colors That Made
Samurai Cabinet Enamel The Standard In

1908



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New Colors Were D. H. R. Originations
In 1908. We Are Just As Far Ahead Now.

"D. H. R. Materials Do Not **COST** *You, They* **SAVE** *You"*

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Kindly mention INDUSTRIAL FINISHING when writing advertisers

With the Editor

SOME very few years ago a new answer was coined for, "How's business?" A man who knew actual conditions late in 1925 couldn't honestly answer "Fine!" or even "Good!" nor could he properly say "Rotten!" Someone began using the very descriptive word "Spotty!" which, of course, everyone instantly understood.

Spotty prosperity still continues, and indications are that it's going to continue to continue. A buyer's market prevails and the concerns that are alert in developing what is needed or desired by the trade they serve—companies that are progressive but economical in manufacturing, aggressive in their sales promotion work, and courteous and fair in their dealings—these concerns are not going to want for business. Their establishments are now and will continue to be the prosperous spots in spotty prosperity.

Manufacturers whose advertised products are pushed by salesmen who go directly to the users—they are, for the most part, enjoying good business. But manufacturers whose only sales outlet is through dealers that are not in step with modern merchandising methods—their business, in many cases, is not so good and the business of concerns who sell them goods is likewise affected unfavorably.

Many furniture manufacturers, in particular, have been obliged to curtail the output of their factories, not because the millions of homes are filled with good furniture, but because stocked-up furniture retailers continue to wait for prospective customers to take the initiative and come into their stores to place orders.

O. H. Rohr

Managing Editor

We have just completed final tests, and are now offering to the industrial finishing industry—a brand new lacquer—a new kind of lacquer—something en-

GLOSS LACQUER

This product can be used as a final finish, producing a rich, glossy surface . . . has covering capacity equal to ordinary rubbing varnish.

It makes an excellent lacquer filler for use under our new Flat Lacquer and can also be used under any clear lacquer—in place of shellac or shellac substitute.

Send for Sample. . .
and price—today.

WILLIAM LILLY PAINT CO.
2044 N. Rural St.
INDIANAPOLIS, IND.

"These panel tests were made up to satisfy my own mind regarding the effects of sudden changes of temperature and also moisture effects. I am very glad to submit these for publication if you think them worth while. The explanations are my own deductions in which I may be wrong and surely stand for correction. Would be glad to hear from any one regarding this subject."—

E. B. Smethers

Checks in Lacquered Wood Test Panels

Foreman Finisher of the Storecraft Mfg. Co. describes how he prepared wood panels for test purposes, reveals results after one and two years and explains his theory of why the lacquer finishes checked

By E. B. Smethers

THE SUBJECT of varnish checks resulting from various causes, such as old age, one coat over another that was not thoroughly dried, varnish brushed on too heavy, various coats not being built up of materials with a proper elasticity, temperature and humidity checks, etc., I think are understood and recognized by most finishers at this time. Lacquer checks probably have not been encountered so much, as yet.

Fifty Test Panels Prepared

A little over two years ago I finished about fifty 2x6-in. panels of various woods of both open and closed grain. All panels were water stained and the open pores were filled with wood paste filler, especially prepared for use under a lacquer. After thoroughly drying, a coat of shellac, 4-lb. cut diluted four times with denatured alcohol, was brushed on; then three coats of clear wood lacquer were sprayed on, allowing 24 hours drying time between coats. Lacquers from three different manufacturers were used. A flat lacquer was sprayed on a few of these panels.

After the finished panels had thoroughly dried, they were placed directly over a steam radiator, the heat being very intense here at all hours of the day. During the winter months the heat was shut off at various times during extremely cold weather, allowing the temperature to drop well below zero; then the steam would be turned on again. This process was continued through one winter season without checks appearing—that is checks were not discernible to the naked eye.

Result of Excess Moisture

A few of these panels were placed where moisture would be taken on very excessively, the backs or edges not being sealed.

At the expiration of a year very minute hair lines, hardly perceptible to the naked eye, began to show on part of the panels on the first set directly across the grain of the wood. All three lacquers used began to show these about the same time.

At the present writing—over two years since the test panels were made—almost the entire group of panels are checked across the grain, the checks varying in distance apart from about ⅛ to ½-in. The soft woods, such as magnolia and gum wood, show somewhat plainer and the checks seem to be closer together than on the harder woods such as oak, walnut, maple and birch.

The panels subjected to moisture showed results in a short length of time, the checks running longitudingly. Here is the most feasible explanation that the writer is able to give concerning these checks, but first it might be advisable to consider the drying of varnishes and lacquers.

Varnish Versus Lacquer

It is generally understood that varnish consumes oxygen as long as it is alive, consequently increasing in volume and weight. On the other hand lacquer is dry after the thinners are all evaporated, leaving simply a tight film. The varnish film—if it is a good elastic varnish—will give under pressure to the extent of its elasticity, while lacquer films, being very hard and tough, will merely resist pressure until the film is broken.

As a rule, temperature checks in varnish will disappear under ordinary conditions, but in the case of a lacquer film the check remains and apparently the film is ruined. It will be explained later on in this article how a few panels were treated with success to exterminate the checks in lacquer.

Why Checking Occurred

Now, it is very well known how wood contracts and expands with sudden changes of temperature, the movement being across the grain. There is no change in the wood with the grain, therefore the lacquer film naturally goes across with the wood, but is held tight longitudingly; result, checks across the grain. Naturally the nature of the lacquer controls the size and depth of the checks to a certain degree, according to its flexibility.

The checks on the second set of panels, running with the grain, are merely the result of the wood taking on moisture, which it is understood all woods do in the hot humid days of summer. These panels have, of course, been speeded up by applying moisture and conditions for so doing. This taking on of excess moisture naturally swells the wood, the high lights pushing up; if the movement and swelling is strong enough the lacquer film is broken and, of course, in this case with the grain or lengthwise.

To the writer, this checking is not a lacquer failure or disappointment because under normal conditions it would surely take a number of years to accomplish what one year did under the severe conditions. As stated before, a varnish film, when so checked under severe conditions, will usually return to its former state if it is a good elastic varnish and is still "alive." On the other hand, lacquer films are broken permanently or so it seemed at first.

What Closed the Checks

Just recently a few of the worst checked films were sprayed with one and sometimes two coats, where required, of lacquer thinner. The checks completely disappeared and up to date have not returned under normal conditions. In the case of the checks with the grain, this does not work out,

as the wood does not return to its former smooth surface.

The original smoothly rubbed and polished surface of the first set of panels is in very good condition as to hardness and toughness, and when held in certain positions the checks cannot be seen, the finish being seemingly perfect.

Flat Lacquer; Enamel

The panels finished with a flat lacquer have no checks noticeable to the naked eye; they have not as yet been examined through a microscope.

A few panels were built up with pyroxylin filler as an undercoat and two coats of lacquer enamel but these do not show any checks.

A few panels, after being finished out in the clear lacquers as the other clear lacquered panels, were sprayed with two coats of lacquer enamel. These show no signs of temperature checks.

Beauty in Club Car

Enjoyment of scenic wonders has always gone far toward providing an ideal vacation or a pleasant business trip, especially when the trip has been taken amid pleasant surroundings. But now traveling has been made even more luxurious in a new type of club car, five of which have been recently put into service by one of the western railroads.

An idea of the richness of the car interiors, which are finished in real American walnut, can be gained from the illustration. Between each pair of windows is a panel of specially-cut walnut veneer arranged in a diamond pattern. And over each window is a flowered design set in the walnut, the symmetrical and varied grain effects being brightened by soft side lights delicately shaded.

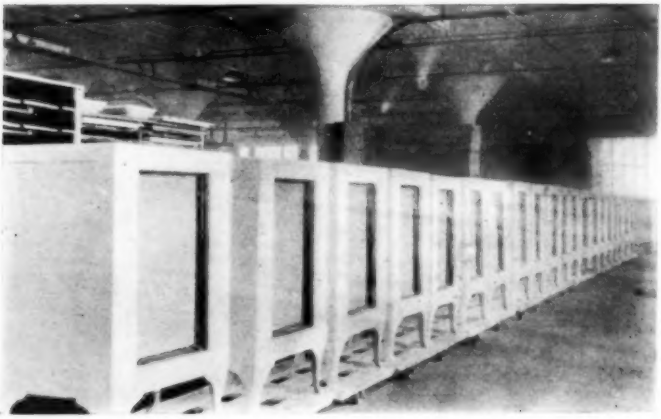
In the center of each car, at either side of the aisle, are nooks set apart for those who wish to play cards. Partitions which separate these nooks from the rest of the car are of walnut and have

Corner of new club car in which American walnut paneling, finished natural, is used effectively to enrich and beautify the interior.

cigar lighters mounted on them like the lighters on automobile instrument boards. Cushions and backs are softly upholstered in leather.

In the rest of the car the furniture is overstuffed in a charming variety of design and color, the chairs being movable so that they can be placed where they will provide the utmost in relaxation and rest. Comfort is still further increased with a thermostat which maintains a constant temperature. And greater value is given to the observation platform by enclosing it in glass, the type used being capable of letting in the sun's ultra violet or "health rays" which cannot come through ordinary glass.—A. W. M. A.

Color makes an emphatic appeal to the eye, and in the application of color to a manufactured article, the finisher can give it the recognition it deserves.



Finishing Steel Electric Refrigerators

Superintendent of Painting Department at Heintz Mfg. Co. (Pressed Steel Products) reveals some interesting notes, which he has learned about the cleaning, priming, prime-coat baking, touching up, and final lacquering of modern steel refrigerators

By Joseph F. Schmoegner

A MODERN ELECTRICAL steel refrigerator must not only be pleasing to the eye, but it must possess wearing qualities far superior to any other household furnishings made.

There is no doubt, I believe, that a lacquer finish is the ideal finish on a steel refrigerator, but we must bear in mind that lacquer is dehydrating to a certain extent, and we must safeguard ourselves in the selection of primers. An electric refrigerator will deposit moisture on its surface, and unless our priming coat is so designed to withstand considerable moisture, we will experience more or less trouble.

Prefer Oil Primer

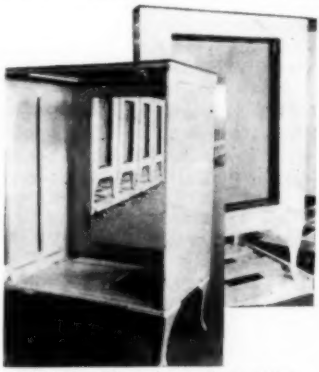
After considerable testing and experimenting I have found that a good grade of oil primer is far superior to a pyroxylin primer. Extra care should be taken in cleaning the outer steel case. I have found naphtha to be almost fool-proof to liberate surface from oil that remains during stamping and drilling processes.

After thoroughly cleaning and wiping clean with naphtha, the steel cases are burned off at a temperature of 600-deg. F. for ten minutes. After cooling off, if

any oil has boiled out—that had been overlooked or had been deposited in hard-to-reach places—it should be cleaned again with naphtha and dried with a clean cloth.

If there are any small traces of rust it should be cut down with emery cloth. The case, in such condition, must be primed within one hour after it leaves the burning-off ovens. If the burning-off process is not desired, sand-blasting is highly recommended after all the oil has been removed.

A sand-blasted object will make a far better surface for finishing than a burned-off surface, but care should be taken that a fine grade of sand is used so as not to destroy too much of the smooth surface of steel—unless we wish to put one or two coats of surfacer on the case, which never should be necessary if the steel stampings are correct.

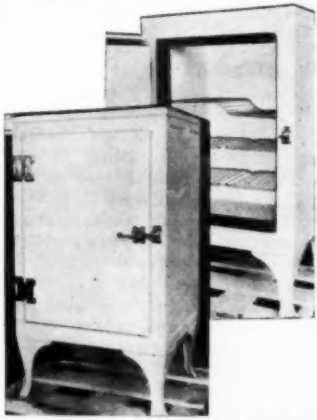


At left: Outside steel case after priming — ready to receive inner liner and packing.
At right: Refrigerator box after application of final coat of lacquer.

Spraying and Baking Primer

The priming coat should be sprayed sparingly; apply just sufficient material so as to form a solid film. Straining priming material is of vital importance; there never should be any grit or foreign matter in the priming coat. Never use coarse abrasive paper to sand out the priming coat; in fact, sanding with No. 320 paper is all that is necessary, providing we are careful with the primer.

The baking of this primer is of utmost importance. If the primer is baked too hard we will experience peeling; if not baked enough we will have trouble with lifting. We must find a happy medium, where the primer will soften just enough to form a bond with the pyroxylin enamel.



The interior of an assembled box appears above, while below, there is a completely assembled refrigerator box ready for shipment.

Touching up; Cleaning

Cases in primed condition are usually ready to partly assemble. If during this operation the primer is scratched or destroyed, the marred places should be sandpapered bright and touched up with a pyroxylin primer—using a small touch-up gun—and afterwards sandpapered smooth.

During the assembling operation, the outside case is handled

considerably, and here again I want to impress the importance of cleaning the primed surface first with naphtha and afterward with a damp cloth moistened with a high-grade thinner.* In this cleaned condition the box should reach the lacquer spray room.

White Lacquer

White lacquer is the customary color for refrigerating work. If we wish to have a blue-white job, we can achieve it in two different ways. First, we use a blue-white lacquer over a gray primer, or we use an ordinary white lacquer over a blue-black primer. If we use a blue-white primer it is highly important to agitate the material continuously; also be sure to mix the settlement in cans.

This type of lacquer should never be bought in larger than five-gallon containers. In production work, where outside cases and doors are furnished separate, it often causes trouble as to matching up doors to their shade, while if a pure white lacquer is used over a blue-black primer, we never experience that trouble.

Protect Inside Surfaces

Great care should be taken to protect the inside of the box from lacquer. Lacquer has a very objectionable smell and will penetrate, especially butter and milk. That also means that the sealing weld on the door should always be beyond the lacquer line, since only in this manner can we prevent the lacquer odor from entering the inner chamber. The inner chamber, of course, should be by all means vitrified enamel.

Three coats of white lacquer over one priming coat produces a beautiful soft gloss job.

A few warnings about touching up! A small touch-up gun is the most suitable instrument to use. If by any chance spray dust shows around the touched-up place, a good rubbing compound will remove it. This spot should be thoroughly cleaned with naphtha and re-sprayed with a thin coat of thinner.

If only one side of the box is re-sprayed, and we experience spray dust on the other side, the best thing to do is to apply a masking composition on its side, which is cleaned off after spraying. This finishing method I have used on 10,000 refrigerators with good success.

New solvents have been produced synthetically by chemists to meet the requirements of the lacquer industry. A number of these are of a very mild, almost odorless nature. Nearly all of our newer synthetic solvents are possessed of greater solvent strength for nitro-cellulose and thus will stand greater dilution with non-solvents than will our older lacquer solvents. Many further developments in this field can be expected.

Pigmented lacquers are now at hand which dry with a high luster surface without need of rubbing or polishing operations to attain such gloss, being of more durable nature than color varnishes and enamels, and suitable for use on automobiles and on many other articles and surfaces.

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*If hydroline is used to seal seams of the inner liner and packing, it is very important that every trace of hydroline be removed from the surface of the primer. Hydroline will dissolve very readily in naphtha and lacquer thinner and therefore will easily stain the primer. White lacquer, applied over a stain primer, will turn a brownish yellow and therefore cause a lot of trouble.

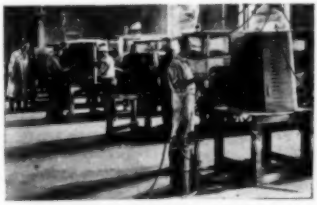
Finish on Used Motor Cars—An Important Sales Value

Experience shows how finish jobs in good condition and appearance are an important factor in the salability of used automobiles and the prices they will command

By Henry Frommes

THERE is perhaps no better illustration of the value of a good finish than is provided just now in the used automobile market. One of the greatest problems in the motor trade today is to find buyers for the used cars turned for trade on new ones. The dealers who have been most successful in turning over their used car stocks are those who have given careful consideration to the finish.

Naturally, a large percentage of the used cars on the market are in pretty bad shape as to surface, not taking into consideration what is underneath the hood. Though the car may have a first rate engine and be otherwise "healthy," the surface goes a long way in attracting buyers.



Automotive finishers at work.

One used-car dealer, turning over 1,000 used cars a year said to this writer, in Detroit: "We find that it always pays to refinish cars when they are unattractive, due to marred or mistreated surface. While we do not always find it good business to overhaul an engine, we nearly always find that a coat of finish properly applied, will add enough to the price the buyer is willing to pay, to allow a fair profit. We refinish four out of five of the cars we take in, in the class selling for $1400 and over when new."

1—Dark Blue
2—Dark red
3—Black
4—Green
5—Yellow
6—White
7—Neutral shades

For instance, this dealer said: "A blue car is worth 10 percent more in a resale than the same car in yellow. Neutral shades, strange to say, are not in demand."

Speaking from the merchandising standpoint, after long experience in automobile merchandising, it would seem that the expert finisher would find a very wide field in the used car market—much wider than he enjoys today.

Granting that surfacing of the new car is the major point in finding a buyer for it, and the fact that there are hundreds of thousands of used cars thrown on the market each year, the dealer is necessarily a buyer of finishing equipment and supplies as well as a customer for the surfacer himself.

In addition to the used cars handled by dealers, we have a big finishing field among the drivers of used cars and this business is not being solicited nearly as ag-

gressively by body painters as it might be, though they seem to have a lot of business. Modern methods and the present high prices which are being obtained for surfacing, make this field highly profitable.

Amateur auto surfacing, as all know, is not successful one time in a hundred. The amateur who sets about to do his own job usually ends by taking his car to the shop and having the job done right.

The fact is that the most progressive dealers today maintain their own refinishing plants using modern pyroxylin lacquers and employing skilled finishers who do very good work, removing the original coats and getting down to the base of the metal. These dealers report that a poor quality of refinishing is worth little more than none, and they speak from experience.

Buying for Looks

I have before me a table of figures prepared by one of the leading used-car dealers of New York; these figures are the result of 11 years experience. He gives the following information on factors that count most in the mind of the average used-car buyer:

Running condition	16 percent
Body condition	14 percent
Tire condition	5 percent
Finish or surface condition	50 percent
Make	5 percent
Mileage	10 percent

In other words, the condition of the surface of the automobile body appears to furnish half the incentive for the choice of the average used-car buyer.

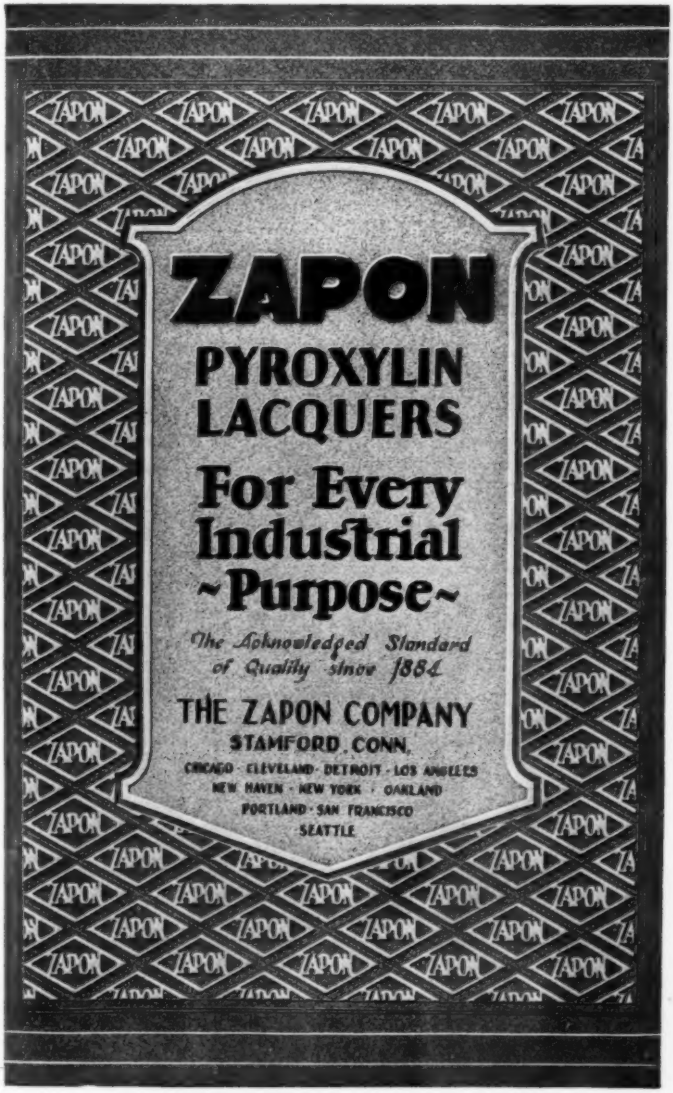
Undoubtedly, manufacturers of automobiles have greatly improved upon their surfacing within the past few years. Finishes are better and more durable; many used cars come to the dealer in excellent condition as to surface. Naturally, it depends somewhat upon the care with which the former owner treated the surface of his car.

I have some other data concerning automobile surfacing which may be of interest to the trade. The same New York dealer places the following selling values on surfacing colors when it comes to finding buyers. Many of the used cars thrown on the market have poor surfaces, considering their life, owing to the ignorance or carelessness of the previous owner in rubbing down his paint regularly with all the grit on the cloth; this treatment in time, will dull even the best finishing job.

New Dealers Have Shops

Dealers in new cars, in finding outlets for the cars they take in on trade, are establishing their own refinishing shops on the property and are, therefore, becoming important buyers of surfacing equipment. This is true in a great many of the higher price classes. It has been brought about by the growing importance of the surface in used car marketing. Many of them have complete spray finishing equipment.

If—as is claimed to be the case—the used car problem is the most serious one to be solved by the motor trade at present, anything that will move used cars off the floors and sales lots will serve the industry. Inasmuch as experienced dealers lay such great stress on finish, the situation is worth serious attention of the trade. If the dealer can spend $100 refinishing an automobile and thereby add $50 to his ultimate selling price, it becomes a profitable transaction. And we are assured by the dealers that this is the fact.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Linseed Oil

The bodying and refining of linseed oil is not a synthetic process, but much has been learned in recent years by utilizing the knowledge of chemistry in the preparation of special oils. Linseed oil dries by oxidation, or rather by the absorbing of oxygen.

Raw oil dries in five days and it has been found that during that drying time it increases 16 percent in weight. Linseed oil, which, as the name implies, consists largely of linoleic acid, absorbs oxygen on exposure and thus becomes hard.

It is called a drying oil, although properly speaking linseed oil does not dry since it contains no water, or at least should not. The process, therefore, is oxidation.

Pure raw linseed oil does not need to be charred, thickened or darkened beyond recognition to make it dry faster. It does not need to be adulterated with rosin or resinates. All that is required is a minute quantity of a catalytic metal.

The difference between the high type boiled linseed oil and the old process boiled linseed oil, is the difference between scientific methods and unscientific methods. We have been able to introduce a small quantity of metal without destroying the anatomy of the oil.

The word "boiled" in connection with boiled linseed oil has been incorrectly interpreted. By "boiled" it would be understood that the oil was brought up to a boiling point which is not the case.

Linseed, as well as other vegetable oils, decomposes long before the boiling point is reached and it is assumed that the expression "boiled linseed oil" is derived from the fact that in order to prepare it has to be heated.

Excerpts from Dr. Alexander Schwarcman's talk to the Pittsburgh club about drying oils, Jan. 12, 1928.

Clear and pigmented lacquers are now produced possessed of improved brushing qualities and of extremely durable nature when tested on exterior or interior surfaces.

It is now possible to produce lacquers of sufficient solid contents to compare favorably with varnishes and enamels.

H. M. Johnson Directs Technical Service of A. C. Horn Co.

Mr. Harold M. Johnson, for several years chief chemist of the Murphy Varnish Co., and more recently President and General Manager of Johnson, McKim, Johnson Co., has joined the A. C. Horn Co., Long Island City, as Director of Technical Service.

Mr. Johnson is well known as a lecturer and writer on technical subjects connected with the paint industry. He is a member of the American Chemical Society, the American Society for Testing Materials and the New York Production Club.

Finishing Research Laboratories

The Finishing Research Laboratories, Inc., 1164 West 22nd St., Chicago, Ill., announces its establishment for the several services indicated by its name, including inspection, surveys, the correct material to use, etc.

For example, customers can have samples of competitive materials tested comparatively with others that they contemplate using. Tests of this kind, when made under standard laboratory conditions, should be valuable and fair to all concerned. The company's expensive and extensive testing equipment consists of everything that is needed to make tests on finishing materials of all kinds including spraying, baking and dipping equipment, fadometers, weatherometers, etc.

A library supplementing the laboratory will be, when complete, the most extensive of its kind. Mr. William J. Miskella is one of the consulting engineers.

IMPERVIOUS PRODUCTS

Baking Enamels and Japans
Finishing Varnishes
Protective Coatings
Pyroxylin Lacquers

Specially made for finish of

UNIFORMITY
QUALITY
PERMANENCY

An Impervious Varnish, Japan or Lacquer is especially made for a specific purpose for finish on Iron, Steel, Aluminum or Wood.

We maintain a complete and practical baking, spraying and finishing department with trained operators for demonstrating and to assist in solving problems of baking, spraying or finishing your own products.

IMPERVIOUS VARNISH COMPANY

Manufacturers Industrial Finishes

General Office — 421 Wood Street

Pittsburgh, Penna.

Choosing Finishes and Colors for Newly Designed Furniture

Some ideas and suggestions regarding the purpose and choice of finishes, colors and decorations for use on furniture and emphasizing the need of properly guided originality

By R. B. Prentice

WHEN a newly-designed piece of furniture—the sample perhaps of a new line—has been made up in the white, the question of finish immediately comes up for decision.

Shall we use an opaque or a transparent finish. A transparent finish provides for more than simply showing off the grain of the wood; it shows off to every observer the furniture maker's skill—or lack of it—in using the strength of the wood to best advantage. A chair rocker finished in a transparent material shows at once whether the rocker was sawed or bent; it displays good and bad construction alike.

To use an opaque finish to conceal the fact that a chair rocker has been scroll sawed instead of bent, is to confess poor quality. Opaque finishes must have some other purpose than simply that of hiding inferiority in quality, and that other purpose or virtue must be more obvious. It must be of such a character as to instill in the prospective buyer a firm faith in the manufacturer's honesty. The value of this other virtue must be supreme and obviously greater than any saving possible by the use of poor wood, or the poor use of wood. This effect is not an easy one to produce, but nevertheless it is entirely possible and practicable.

The proper use of transparent finishes entails a study of optical effects in which consideration is given to the relative importance of gloss, etc. Beyond enduring optical excellence, a transparent finish may represent little of human skill. But with the opaque finishes, the use of which precludes any assistance from nature, human skill is put on trial. If a manufacturer be satisfied with achieving a "dipped look on his furniture, his task is a simple one, but if he strives to achieve

beauty, then his task is more difficult.

Use of Color

Color needs no interpretation; our reactions to color are instinctive, and its effects upon us are directly sensual. Colors can be beautiful regardless of the form of the colored object. By color we intuitively judge age. Brilliance of color suggests newness. Newness is a manifestation of recent activity—of life. If the brilliance of color endured, colors would be devoid of suggestion; it is because they fade and grow dull that we revel in the sparkle and life of a new lustrous finish.

Colors are symbolic of vital functions, and may indeed, be assigned no more fitting characteristics than those assigned by Nature herself. We can, of course, create hues and tints that suggest the weird, the uncanny, the mysterious, the melodramatic and so on, but ventures into these strange realms of color may not be uniformly appraised, nor their popularity estimated.

Certainly, color must always be changeable to be of value; it is doubtful whether man can provide a color of such permanent brilliance and sparkle as to deceive himself perpetually. Colors, must, therefore, be encountered more or less by chance or accident, and should not be in constant view.

It is also doubtful whether any decorations not actually the work of artists may be applied with lasting effect.

Whilst colors and ornamentations may be applied in a manner to suggest inordinate skill and intelligence, the fact that such effects do not subserve utility denies them the distinction of classification with the more enduring records.

We have not grown indifferent; the trouble is, we have produced too few records of individual human achievement in furniture design and finish. To attain greatness in one lifetime is the requirement for fame, and likewise to attain distinction as beautiful, a piece of furniture must exhibit some sign of extraordinary accomplishment on the part of some one human.

Everyone has had the experience of having a straw hat ruined in a summer rain storm, and it certainly was an ingenious brain that thought of waterproofing them with a protective coat of lacquer.

The purpose in lacquering brass goods and plated ware is to protect the highly-polished surfaces against tarnishing, the idea of decoration being only secondary.

Our N. Y. Office Moves

Industrial Finishing's New York City office, in charge of C. A. Larson, is now located at 254 West 31st Street. Telephone Penna. 9049.

Finishing by Correspondence

The M. L. Campbell Co., Kansas City, Mo., is putting out a correspondence course in furniture and piano finishing, repairing and patching, which is furnished free to Campbell customers.

Moves Office to Factory

After May 1, the New York Office of the Maas & Waldstein Co., will be permanently located at 438 Riverside Ave., Newark, N. J. The factory being located at this point consolidates all departments. A new building now under construction will provide ample space for both the executive and factory offices.—

A new building for the manufacture of enamels and a new boiler house were completed last year to provide additional facilities for making lacquers and enamels to take care of a larger volume of business.

Selling and Buying Industrial Finishes

Finish salesman reviews some experiences in calling on buyers of industrial finishes and offers a few interesting suggestions for both buyers and salesmen in the industrial finishing line

By J. C. Hertstein, Jr.

SINCE the editor of INDUSTRIAL FINISHING is asking for more opinions on the subject of contact between buyer and seller,* I believe it not out of place to mention a few experiences I have had in the lacquer and varnish business.

One day I called on the purchasing agent of a very large plant. My call was to try to interest him in a flat lacquer—a type of material for finishing which I knew this plant should use. Therefore as soon as the factory had furnished me with satisfactory sample panels and finished in this new flat lacquer, I went to see this buyer.

Instead of welcoming me with this finish, he glanced at the panels with little interest and practically snubbed me. Being rather independent—I think no salesman need be subjected to discourtesy when it is unnecessary—when snubbed without reason I politely took leave. The buyer stated in a short abrupt manner that the company was not interested in anything we might have—that they were satisfied.

In less than one month this large concern had almost completely adopted a flat lacquer for use on its entire output, and today use the material exclusively.

This may be an exception but I have found that most buyers could better give a receptive ear to what all salesmen have to say, for if they are to learn about new things it will have to come from the industry that makes them. All buyers should be on the alert to find something better for their respective companies.

The "Yes" Buyer

Then there is another class of buyer that may be scarce to find but occasionally you run into one. He is the "yes" kind. He agrees with everything you say and often allows you to send a sample, which never gets tested because the company never expects to test it but lets you send the sample to get rid of you. Some salesmen, however, continue making calls once a week or so, to find out about the sample, and bother the buyer much more than if he had told the salesman outright that the company was not interested.

In January issue, writer C. Dan Youngs told us we ought to have something definite to offer a buyer before we go to him. There is a world of truth in that statement and a lot of time would be saved if all salesmen who read this article by Mr. Youngs would heed that suggestion.

Occasionally we meet the type of salesman who believes that salesmanship demands that he tell the buyer over and over that everything his company makes is

*See January issue, pages 54-56; March, pages 56-60; and April, pages 21-24.

Saved!

half the rubbing time

half the cost

half the labor

A lacquer that gives a finish of surpassing beauty, at an actual saving

Usually a man who has to pay for finishing material is glad enough to find one that gives better work at the same cost, or that gives good work at less cost. How about it when you find one that gives you a transparent rubbed effect finish and actually at a lower cost?

We will let Murphy Clear Tone Velvet Lacquer speak for itself:

It is the easiest sanding lacquer we know of and positively will not clog sandpaper.
Saves time, labor, and money in the important operation of rubbing.
It does not polish up with wear.
It dries quickly to a true rubbed effect.
It does not settle.
It does not cloud the work.
It prevents "pinholing."
Intermixes with any good lacquer.

If you have not yet experienced the beauty, ease of production, and economy of Murphy Clear Tone Velvet Lacquer, learn about it now. Order it o write us for demonstration, or at least for full information about this important material.

MURPHY VARNISH COMPANY

Newark Chicago
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Essex Varnish Company, Newark
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Baking Material Specialists

Murphy Clear Tone Velvet Lacquer

MURPHY FINE FINISHES

Famous for 63 years among architects, master painters and makers of products requiring a fine finish.

Air-drying and Baking Varnishes
Enamels, Lacquers and Stains for Brushing and Spraying and Dipping

the best in the world, and nothing else compares at all with his line. He laughs at competition, but that type of salesmen—the braggadocia kind—seldom gets very far in this world of "Show me or get out."

The Ideal Salesman

What is an ideal salesman? My conception of what makes up an ideal salesman is one that first of all is 100 percent gentleman. He ought to know something about modern finishing methods, besides knowing the technicalities of his company's materials. He ought to pick out an outstanding product in his line and push that product.

He ought to know something about the requirements of the prospective customer upon whom he is about to call and then have, as Mr. Youngs has told us, a good proposition to offer. Anyway, if he hasn't he is only wasting his own and the buyer's time. If he has an outstanding product he ought to be able to take off his coat and show the customer how and why it is outstanding and superior to competitors.

If buyers would indulge in a process of elimination, as C. Dan Youngs advises, I am of the opinion that industry as a whole would be greatly benefited.

It has often been said that the paint and varnish business, at least the selling end of it, is a hard game to follow and that most salesmen who try it, fail. This is perhaps due to the fact that they do not study the needs of their prospects, and study their own line; then center their efforts upon certain concerns which they believe can use certain of their outstanding products advantageously.

In the varnish and lacquer game, it is a known fact that some concerns seem to excel in certain finishes and consequently push them hardest, while other houses seem to put out another superior type of finish.

In general there is still a lot of headwork to be done if improvements are to follow, and we will do better to remain in that great school of learning. One way to do this latter is by reading this publication each month and get each writer's ideas.

So great is the scope of mechanical painting equipment today, that it is used for finishing nearly every conceivable type of product—from airplanes and steam engines down to hats and toys.

Enthusiasm is a great thing. Don't be afraid of it, and when you get it, display it.

Veco Striping Color Card

The V.E.P. Co., 5126 N. 2nd St., St. Louis, Mo., is sending out a folder of information about striping lacquers and striping lacquer thinners, with which is included sample strips of 50 different colors, shades, and tints, properly labeled for identification.

Compressor Bulletin

The Quincy Compressor Co., Quincy, Ill., has just received from the printer, a new supply of reprints of bulletin No. 2020 illustrating and describing paint spray compressor equipment. A copy will be sent to any one interested in compressors used for this service.

DuPont Develops "Du-Lite"

Announcement has been made of the success of research and experimental work in laboratories of E. I. du Pont de Nemours & Co., which have resulted in producing a "mill white" that retains its whiteness indefinitely and without tendency to "yellow," thereby overcoming an essential fault in this type of white which industrial chemists have long sought to prevent. The product has been given the trade name of "Du-Lite."

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Lacquers	**Stains**
Enamels	**First Coaters**

NOTICE!

Watch for our advertisement next month. It will be the first of a series giving valuable information which will be helpful to you.

THE GILBERT SPRUANCE CO.
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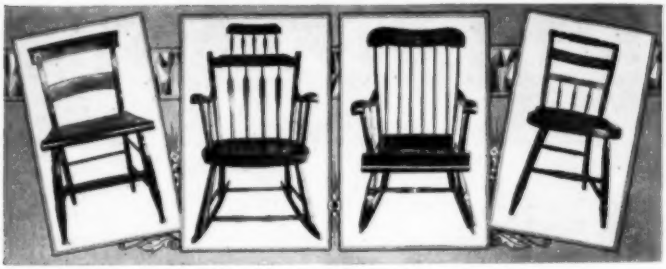

Custom Shop Restoring of Antique Chairs

Expert furniture refinisher calls attention to the possibilities of refinishing antique chairs and explains how to remove or restore old finishes, and what colors and decorative treatment to use

By J. K. Cooper

THE present day craze for antiques has brought out of attics, cellars, and almost every kind of hidden place, numerous old chairs which have been laid away for years. Some old chairs have been used for wash benches, saw bucks and other services which have almost made wrecks of them. Now it isn't every home that offers a suitable place for any kind of an antique, such as a massive chest of drawers for example, but there's a place in every home for a stenciled chair of bygone days.

These chairs may be used at desks, or in the breakfast room, on the sun porch and in various odd corners. There are many types of old chairs that are being brought to light such as Hitchcock, Shearton, Windsors of many types, and others.

The finisher of these chairs often finds it necessary to imagine how they looked when original. Sometimes the chairs are in fairly good shape, with only parts of the decoration missing and some of the striping gone. These places must be touched up to look like the old. Various kinds of gold (bright or dull) have been used in some of these decorations, while others are found with some silver or metallic color in the design.

Producing Aged Effect

In touching up these stencils, choose the gold nearest to the original; then kill the brightness or newness by glazing with burnt umber or drop black in japan. After this treatment the entire chair may be freshened up with a coat of varnish or lacquer and rubbed to a dull dead finish, which will make it look very old.

Many old chairs still have the original rush bottom, which has been painted at different times. This cannot be removed owing to

Here is the Answer —

We have received so many inquiries as to what industries Armitage Lacquer Finishes are adaptable, we feel it will be to the interest of a great number to present the following partial list.

Automobiles
Wood and Metal Furniture
Railroad and Street Railway Cars
Buses
Taxicabs
Airplanes
Linoleum and Oil Cloth
Wall Paper
Textiles
Wall Board
Toys
Motors
Imitation Leather
Radio Equipment
Adding Machines
Typewriters
Washing Machines
Lawn Mowers
Refrigerators
Cash Registers
Electrical Equipment and Appliances
Machinery of Various Kinds

You, perhaps, have a problem covering an application not included in this list.

Send it along to us. Our Technical Department is entirely at your service.

John L. Armitage & Co.
Established 1876 at
Newark, N. J.

the rush being very brittle. The best thing to do is to paint this with a color similar to the rush color, after which glaze over with umber or black and, while it is still wet, rub with pumice stone and dust off. This will lend an old dusty appearance to the bottom.

Many of these chairs will need a complete refinishing from the wood surface on out. In this event, they must be sanded or cleaned off first, as no doubt they will be in a bad condition. Then a coat or two of red ground should be applied. This ground coat can be made of burnt sienna or Tuscan red to a deep color, or a lacquer of not too bright a color. After this ground coat has dried, apply a glaze coat made of black asphaltum and rose pink of about equal parts—or according to the deepness of the glaze—being careful not to use it too thick.

This material is applied with a stubby brush, after which the parts coated are rubbed off in irregular sweeps of the brush, leaving streaks or spots of red and the dark glaze to look like rosewood or mahogany. A sponge may be used to wipe these spots instead of the brush, but after a little practice, the brush used to glaze with will do the wiping while the coat is being applied. The glaze will dry slowly (in about eight hours) after which apply a coat of shellac colored with a dark mahogany stain. Then the chair is ready for decoration.

Stencil and Stripe

A stencil, suitable for the size of the proper place on the chair, should be used in gold or whatever color may be desired. These chairs are nearly all striped in gold, lemon or chrome yellow. Most of the old chairs were done in this way. After the stencil and striping color is dry, proceed to deaden the colors and make the aged appearance.

Probably the best and quickest way to do this is to go over the stripe and stencil with a coat of colored shellac—possibly twice—to give an aged appearance to the color. If the stripe is glazed alone, there is likely to be a mussy appearance left along the edge. Dull the chair by rubbing the surface with pumice stone or fine steel wool, or by applying a dead flat varnish; then clean it. If the bottom should be new, apply a coat of the colored shellac, and wipe when applying. The finished article will then present the desired effect.

Many old chairs were originally done in colors, one color in particular being very popular on certain types of chairs, such as Windsors and wooden bottom chairs of various kinds. This is a very bright yellow, with striping nearly always in two colors such as a wide stripe of green and a fine line of black so placed on the article as to make it look its best. After the striping is dry, glaze over with a coat of drop black in japan, with a little oil added to slow up the drying. After applying this, wipe it off quickly; this will leave an aged and spotted appearance.

Decorations

If the bottoms are of rush and new or old, treat them like the rest of the chair. A stencil of a dirty looking gold goes best with this color. A gold with a little drop black mixed in will give the desired effect.

Some chairs are painted in black with yellow and gold striping, after which the stripe must be "deadened." Some few are done in reds and grays, with glaze

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Manufacturers of all types of clear Varnishes and Lacquers

coatings of different kinds. Often the finisher gets a job that has had a stencil which has been coated with color or something else. The customer will want this decoration revealed if possible. Usually this can be done by rubbing with steel wool and alcohol, or very lightly with varnish remover, but this must be done carefully. Rub until the design reappears; then coat in by hand with the colors that were there originally—as nearly as possible.

A short time ago I saw an old bench which came from some place in the South. There were a dozen coats of paint on it, but still a slight trace of a design could be seen. Steel wool and varnish remover were used, going through five coats of paint until the design was reached. This design was in yellow, green, red and brown; it had been on so many years that varnish remover didn't have much effect on it. The colors were coated in as they had been originally, and the ground or body color was cut around them. When refinished, that bench was increased in value several times over. Many of these old benches were highly decorated.

Boston Rockers

Many Boston rockers are brought in to be done over. These are nearly always finished in black with a cherry bottom: the arms or the entire chair may be done with a red ground and glaze. Usually they are striped in yellow and have a fruit design of some kind on the back. It's up to the finisher of these chairs to study and search for designs suitable for this class of work. Some chairs must have a single small design: some require one small and one large design—and these must go in proportion to the back or splat so as to give room for the stripe. A glazed finish with the red ground seems to be characteristic of the older chairs.

The most important part of this work is to keep the gold and color as dead as possible, since a bright color on an old chair puts it out of its proper class in value and appearance. This work can be done at a good profit, as one becomes familiar with it and works out methods of his own. Unless there is a lot of cleaning or scraping, the ordinary chair can be done in about an hour. This includes glazing, stenciling, striping and the entire application of all finish.

Storage problems should generally be considered from the standpoint of cubic contents. Perhaps the most complex question from an engineering viewpoint is the standardization of equipment that will accommodate the materials to be stored at the lowest possible cost.

You can't buy confidence. About the only way to get it is to merit it.

The inflammability of lacquer films has been materially reduced through the use of synthetic rezyls.

Flexible Shafts Catalog

N. A. Strand & Co., 5001 N. Lincoln St., Chicago, exclusive manufacturers of flexible shafts and equipment, have just published a new catalog of 48 pages covering several new types of machines and attachments. This catalog is now ready for distribution.

Wisconsin Representative for Cadillac Shellac

The Cadillac Shellac Co., Detroit, Mich., announces the appointment of Mr. Harold T. Illing, with headquarters at 620 East Water St., Milwaukee, as its Wisconsin representative.

Only One Gum Used in Barrett's Shellac Varnish

That is SELECTED PURE ORANGE GUM SHELLAC

It is bleached by special process for White Shellac Varnish, but for Orange Shellac Varnish the gum is used (without manipulation) just as received from the warehouse in India.

No Seedlac **No Substitutes**

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Full Weight **Fair Price**

Look over your Shellac needs, whether White Shellac—Orange Shellac gums or Shellac varnishes, and let us place prices before you for consideration.

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Exposure Tests of Finishes by Machine

Consulting engineer on finishes and finishing problems points out how important it is to be able to test the durability, permanency and weathering characteristics of finishes, and explains how this can now be done by the weather-ometer

By William J. Miskella, M. E.

HOW CAN I tell which material is best? This is a question that has been asked throughout the history of finishing materials—no doubt it was asked in King Tut's time and it has never been definitely answered. One finisher may claim that the material he is using is best, while another may give the medal to an entirely different make of the same class of material. Some of the opinions for and against different finishing materials originate in the advertising copy and sales talk regarding them, while still others come as a result of laborious tests of various competitive materials.

One of the outstanding devices that has enabled paint, varnish and lacquer manufacturers to learn the facts regarding the life and fading qualities of various materials, is a laboratory machine that produces artificial sunlight. This machine is built around the ultra-violet light which, from the outside, looks like the old carbon street lamp that was so common 20 years ago and which almost passed out of existence except for laboratory use. A thermo glass globe surrounding this arc produces, artificially, rays of light that have substantially the same qualities as sunlight.

What Sunlight Does

Sunlight, the great builder of living or animate objects and the great destroyer of dead or inanimate objects works its havoc on finished surfaces exposed to it, with the result that unless the material has some real merit it soon gives way. Perhaps some of the more prolific examples of this were the attempts, a few years ago, to finish automobiles with clear lacquer. Within a few months the transparent film "went bad," and the cause of it was a mystery to nearly all practical and scientific men. Since that time the so called weathering machine has been developed to reveal to the manufacturer in advance just what to expect of certain paint, varnish or lacquer samples.

It is no longer necessary for the material manufacturer to make test plates and place them on his roof and in different parts of the world in order to learn just what a particular material will do under the most exacting conditions.

There are certain technical facts that only the actual exposure will bring out, but for all practical purposes the weathering machine will ascertain, by comparison, the facts that tell the story sufficiently well to permit the one who has the evidence before him to act. In one case, it may be the manufacturer who desires to know what a new formula, that seems to have certain merits, will do in actual service.

"Wears Like Flint"

Years Ahead

Pioneers in the manufacturing of quality finishing materials, The Cleveland Varnish Company by constantly developing new and better products has earned an enviable reputation of being years ahead.

We invite side by side comparisons of our products with those of other manufacturers—both as to materials used and results produced.

We specialize particularly in Lacquers; Clear, Rubbed Effect and Colored.

And in Paragon Rubbed Effect Varnishes: Flat, Velvet, and Semi-Bright.

Greater attraction value is now being demanded more than ever before. We can help you without increasing unit cost.

Your Problems are Our Business

THE CLEVELAND VARNISH COMPANY

Established 1881

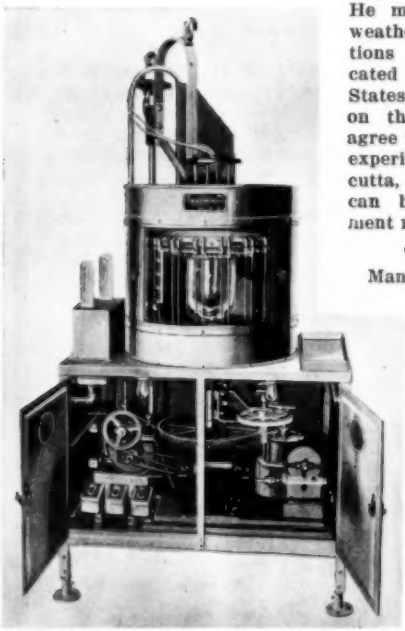
3111 East 87th Street Cleveland, Ohio, U. S. A.

In another case, it may be that the user of a material will want to know how several competitive materials will compare.

This service is now offered to the user of finishing materials, in the form of laboratory service, and enables him to secure the basic facts underlying the various materials under consideration. No longer need he take the word of a salesman who states that his material is the last word; now he can find out definitely and scientifically for himself.

Different Weather Conditions

The weathering machine is not only equipped with means for providing artificial sunlight but, as shown in the illustration, it has mechanical equipment for carrying the samples under test through the following closely related variable conditions: Rain, wind, humidity, darkness and cold.



The weather-ometer (open position) for making standardised weathering tests.

No test on a roof could approximate all these conditions at one time. Something would be lacking and the most unfortunate point of all would be the elapsed time—perhaps several years. I know of one set of samples that has been exposed outside for ten years and is periodically observed for changes.

With the aid of the weathering machine it is now possible for a finish manufacturer to test a material, for example, before he ships an order to Calcutta, India. He may approximate the same weather and temperature conditions in his own laboratory, located anywhere in the United States, by setting the adjustments on the weathering machine to agree with the conditions that are experienced in and around Calcutta, India, the data for which can be obtained from government reports.

Tests Made by Users

Many of the attempted exposure tests that have been made by users in the past have been usually one sided and very unreliable to say the least. True, finish manufacturers use the weathering idea to compare materials of their own make with those of their competitors, but the finish user gains only in such an instance by knowledge of the fact that the particular material manufacturer is continually trying to

Solvents

Butanol NORMAL BUTYL ALCOHOL

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Acetone CHEMICALLY PURE

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make better materials by constantly improving them as new raw materials, oils, pigments and so on are presented to him.

That is all right so far as the relation between a certain material maker and a certain customer is concerned, but it does not apply when that user desires to compare the products of several competitive material manufacturers under exactly the same conditions.

In the past there was no possible way, so far as I know, in which a user of material could compare competitive materials fairly and accurately. There are so many chances for something to happen that these comparative tests in the past have been actually a burlesque on human intelligence. For example, a certain furniture manufacturer of my acquaintance and a large user of finishing materials called for samples of finishing enamel for trial.

Where Variations Occurred

When these samples were received and the comparative tests started, one sample was given to one spray operator to apply to a chair; another sample to another spray operator to apply to a settee; and still another to a third operator to apply to a table. All three operators were located in different parts of the factory and worked under entirely different conditions.

The sample that was finally chosen to represent the best of the three samples was the one applied to the table. The room in which that test was conducted was located directly back of a large japanning oven, the heat from which materially aided in making the sample flow out nicely. It was reasoned after the samples were delivered to the purchasing department for final analysis that if a table could be finished as nicely as that one was, the same material could be used on the chairs and other pieces of furniture.

It was not disclosed, but probably was a fact that each of the spray operators used different air pressure and that the ventilation and the exhaust from the spray booths in the three departments might have furnished different conditions that were favorable or unfavorable to the particular materials under test.

Too, the thinning of the various samples probably varied, as no attempt is usually made to reduce samples of finishing materials accurately for test purposes. It is further rather remote, but still a possibility, that some of the samples tested comparatively were reduced with benzine while others may have been reduced with turpentine.

The advent of the weathering machine coupled up with a means for uniformly and impartially applying materials to test samples that are all alike is, I believe, the most progressive step that has been made in the finishing industry since the discovery that lacquer could be used to advantage in some cases instead of varnishes and paints. Indeed, it creates a new era in sales competition of these materials.

The user who realizes its value will be the first to profit by this wonderful assembly, in the weathering machine, of practically all the elements that finish has to meet ordinarily. He may be one who has been paying a high price for a material that will not stand up, in the the comparative test, with another sample of possibly a lower-priced material that is even better than the one he has

been using so conscientiously for several years.

Some very interesting discoveries are going to be made as a result of this modern development, and some of the sales claims are sure to be either substantiated or proven false. It will be a survival of the fittest, and the unfit will no longer be able to get by with an inferior product in competition with others that are better—all because a standardized sunlight machine has been developed that will, in one hour's exposure, tell how the sample will fare at the end of one week; that 100 hours' exposure will reveal how the sample will be getting along in 100 weeks, and so on as far as one desires to run the tests.

Finishing Low-Priced Novelty Furniture

Directing attention to several problems connected with the finishing of low-priced novelty furniture and explaining in detail a number of materials and methods which are in common use by manufacturers

By P. J. Marvington

SMOKING stands, magazine baskets, end tables and similar articles in the novelty furniture line have become very competitive and, as a result, the quality of the finish is sacrified to some extent in order to reduce the cost of production.

In the effort to eliminate all possible steps and thereby reduce costs, some manufacturers have gone beyond the point of safety in finishing and the finish lasts little longer than the time necessary to get the article into the home of the ultimate user.

Whether smoking stands can be dipped satisfactorily depends largely upon their design and size. Certain smoking stands composed of three essential parts —a base, a turned upright member, and a top—can be satisfactorily finished by dipping if the parts are finished individually and then assembled. Other designs of smoking stands are such that it is practically impossible to finish them satisfactorily by dipping.

Where spraying is the method used for finishing, nitro-cellulose lacquers are often used. In such cases about the shortest and most economical system I know of, is to first dip the piece in shellac substitute and after this coat is dry, sand off the raised fiber of the wood and finish with a heavy, wet coat of colored lacquer enamel. The shellac substitute seals the wood and aids in holding out the lacquer coat.

A somewhat similar finish, but one which is much more durable, is obtained by spraying a coat of transparent pigment lacquer primer on the wood and following with a coat of lacquer enamel after sanding. The finish is improved somewhat if a small amount of lacquer enamel—about

a quart to the gallon of lacquer primer—is added to the primer to aid the coat of lacquer enamel in giving solid hiding power.

Lacquer; Enamel; Varnish

Another system, much in use, is to coat the wood with colored lacquer enamel and, when this is dry, finish with a coat of transparent flat-drying varnish to give a rubbed effect. Still another system reverses this procedure and uses specially-prepared colored oil-enamels on the bare wood, followed by a coat of clear flat lacquer as the finishing coat after sanding. Or the flat varnish may be used to replace the flat lacquer coat over the colored paint undercoat. Or, colored lacquer enamel may be used over the paint undercoat.

In general, what is required is a coating which seals the wood and reduces absorption, then a coat to give color to the finish, and finally a coat to produce the desired body or finish to the work. Any two of these properties are often combined in one material, as for example the color and sealing properties may be combined in one material or the color and finish properties may be combined.

Paint and varnish materials are lower in initial cost than corresponding types of lacquer materials, they cover a larger area per gallon and give deeper or heavier-bodied finishes. On the other hand they require considerably more time to dry before recoating or packing for shipment, and the finish is more easily marred. That is why so many systems in use on low-priced novelty furniture make use of a lacquer type material for speed in conjunction with a paint or varnish type of material for low cost and great spreading power.

Applying Shellac

In general, the thinner the coats of shellac are put on, the tougher the resultant finish will be. It is much better to use about a 2-lb. cut of shellac than to use a 4-lb. cut, when building up a finish with shellac coats. Each coat will dry through more thoroughly and the finish will be tougher in the end. The use of shellac as a straight finishing material, however, is almost a thing of the past in the furniture industry. Either lacquers or varnishes are the most commonly used finishing materials.—M. L. R.

The stability of the various ingredients of a lacquer is especially important to the lacquer manufacturer when the product is likely to be stored for some time, as is often the case when it is packed in small containers. Decomposition of even one constituent may destroy the usefulness of the lacquer.

If the product is finished in a neat and presentable manner, it is sure to invite further consideration from the prospect.

New Bulletin on HB Portable Paint Spray Outfits

The Hobart Bros. Co., Troy, Ohio, is sending out a new four-page bulletin of information and prices on portable paint spray outfits.

Ideal Air Brush Mfg. Co. Moves

The Ideal Air Brush Mfg. Co. announces its removal to a more commodious plant at 275 Lafayette St., New York, N. Y., Mr. Alex. Pethy is president of the company.

Bleaching Out Wood Discolorations

Describing some primitive and some modern methods of bleaching the discolorations out of wood, and emphasizing the extreme care and precision involved in some of these chemical processes

By George Rice

MODERN METHODS of bleaching rust, alkali, damp, weather, pigment and bacteria stains out of wood for refinishing purposes differ somewhat from the methods used in the past. Lime was the principal bleaching agent for wood and most other materials in early times. This substance produced a fair white on pine, poplar, maple, basswood and spruce, but was not very effective on oak, birch, ash, walnut, chestnut, cherry, or any of the woods containing tannic acid.

Lime bleach went into the discard with the introduction of the sulphur bleach. In both the lime and the sulphur bleaches the white is obtained principally through a process of reducing or stripping of the discoloring matters, very much the same as any colored substance is reduced to its leuco compounds by a chemical agent. Then, when the bleached wood is exposed to the action of air or the gases or alkali from the dust contained in the air, oxidation gradually sets up within the texture of the wood and the discolorations reappear, but in less force than originally.

It is on the principle of the bleaching action of common sunlight that some chemicals will produce a snow white on wood under certain conditions, only to lose that white when exposed to other conditions. There was a time when wood that could be easily whitened was spread on meadow grass, which was damp with the morning dew, and left there for sunlight exposure. The bleaching action of the light caused oxidation and most colors, stains and embellishments to be destroyed, were sufficiently bleached out for all practical purposes, even though the work was imperfectly done.

Rising Sulphuric Gas

The sulphur or the stoving method of bleaching consists in subjecting the wood to an atmosphere of sulphuric gas generated within an air-tight chamber. The process is simple and cheap and, like many simple and cheap processes it is not as effective as desired. The penetrating fumes of burning sticks of sulphur, coming up from a fire box through an opening in the floor of the chamber, usually are powerful enough to bleach almost anything.

Sulphur gases are shifty and liable to whiten the lumber more in one place than another. In some of the more recent types of bleach houses, sulphur dioxide fumes are made with a separate burner outside and are drawn into the chamber by a fan. Recirculating devices are employed in connection with this method.

Bleaching With Oxalic Acid

In view of the dissatisfaction usually accompanying the sulphur whites on wood, the liquid sulphur dioxide system has been

substituted by some bleachers. Liquid sulphur dioxide has been a market commodity for some time and can be obtained in the form of compressed gas in steel cylinders. But its reaction is slow and often more time is required to get a clear white than is worth while. The oxalic acid bath system is used by other woodworkers in eliminating common weather stains and stripping the wood of any discolorations that might interfere with finishing processes.

One method of bleaching wood consists of immersing it in a porcelain lined tank containing a solution of oxalic acid. A steam pipe is connected up to heat the bath. This pipe runs below a false bottom of the tank and is perforated. The false bottom is also perforated for the passage of steam to heat the water to about 90-deg. F. An outlet pipe is available for draining purposes.

To 100 gallons of hot water add about 15-lbs. of oxalic acid. Place the wood in this bath and boil until the stains apparently disappear. Then rinse in cold water. Some stains hold on regardless of this or any other bleaching treatment. Sometimes a second, third or even fourth treatment in the oxalic bath will be needed to clear the wood of all blemishes. A little acetic acid, added to the bath, will aid in mild cases, while solutions of tartaric acid may have to be resorted to in others. The application of diluted hydrochloric acid is sometimes necessary to bleach out deep-seated stains.

Bleaching With Hydrogen Peroxide

The bleaching of wood by oxidation is a chemical process requiring, as a rule, something more than an open tank. The writer has seen a porcelain-lined cylinder used for this purpose. This serves as a treating chamber in which the wood material is placed.

The process is carried out by first steaming the wood, then drawing a vacuum in the cylinder and finally admitting the bleaching material, which is at once sucked up by the empty cells in the wood. The hydrogen peroxide bleach bath consists of water, hydrogen peroxide and alkali. Soft water is always more effective and will usually leave the wood a clear white. Hard water can be used, however, if none other is available.

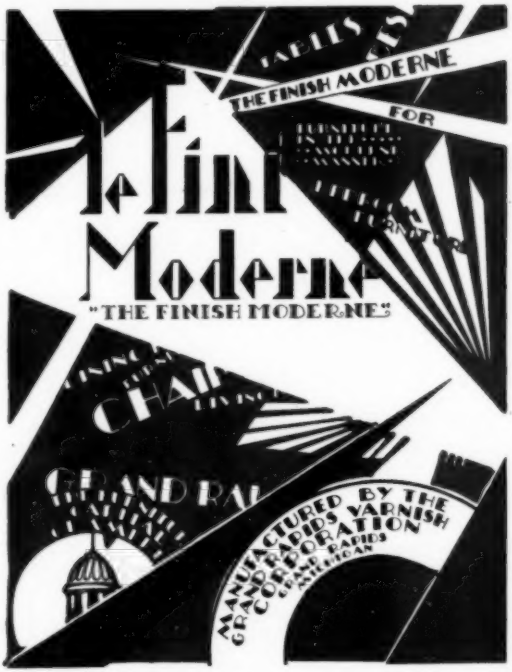
The concentration to use depends so much upon the nature of the material to be bleached, the water, the apparatus and the degree of whiteness desired, that specific information can hardly be given on alkali control and temperatures. There are such things as under-bleaching and over-bleaching. In the event of under-bleaching, it is not difficult to add hydrogen peroxide until the desired whiteness appears.

Danger of Injury to Wood

While the fiber toughness of most wood protects it against impairment in its physical structure, carelessly-prepared bleaches have been known to do more injury than good. A "ten-volume hydrogen peroxide lake," of itself, will seldom if ever injure ordinary woods. But if wood is over-bleached in a liquor of this kind, in which an excess of alkali also exists, the combination is likely to attack the fiber structure and harm it.

Intelligent chemical control of the bleaching is important, regardless of the nature of the ingredients used. I have seen

Announcing:



"le Fini Moderne" means "the modern finish." The name comprises a group of finishing materials and finishing systems developed by the Grand Rapids Varnish Corporation for the specific use upon furniture designed and made in the new style that is sweeping the country.

Preservation of the natural beauty of the wood is absolutely essential and these new finishing systems make it possible to use either lacquer or varnish to obtain the desired effects.

It was to be expected that the Grand Rapids Varnish Corporation, in the Furniture Capital of America, in close touch with all the latest wood finishing developments, should have developed and produced "le Fini Moderne."

A word from you will bring our representative for additional information and details.

Grand Rapids Varnish Corporation

in the Furniture Capital of America

bleached wood junked because of the chemical changes brought about in its fiber, due entirely to incompetent management. Also, wood which has been brought to a good white, but which could not be used for the purpose intended because of objectional physical additions to the fiber, such as foreign deposits that could not be removed by rinsing. Usually the wash will clear the wood of all impurities that may have been taken up during the bleaching process. Actual spoilage amounts to very little in the average wood-bleaching plant.

Tinted Whites

All white woods are not required to be precisely snow-white; some should be "cream-white," "brown-white," "lemon-white" or "blue-white." Wood easily absorbs and retains acid or alkaline substances.

All of the alkaline treatments used to "cream" or "brown" a white to the tint desired are more or less effective along these lines. They consist of soda, potash, ammonia, barium, common magnesia and strontium. The peroxide bath, worked slightly alkaline, is followed by an acid bath to put the desired tinting on the bleached wood, so that its white will assume the cream-white or other type of white wanted.

Some bleached woods are blued in order to get a better white or to produce a blue-white. Such woods are bleached in a solution of equal parts of peroxide of hydrogen ten volumes, and equal parts of water made slightly alkaline with ammonia or silicate of soda. The temperature is brought to about 110-deg. F. and maintained during the five or more hours of bleaching. The bluing is made with any of the easily soluble-acid dyestuffs like methyl violet, for example. Any of the fast tinting-blues can be obtained ready for use.

New Striping Device

A new hand tool with which an inexperienced workman can make perfectly even pencil stripes in varying widths with paints, color enamels or color lacquers is announced by The E. M. Reeves Co., Campbell, Mo. The tool is adaptable to practically all kinds of striping and on all kinds of products and finished surfaces where striping can be done. The accompanying cut shows it in service on an automobile-body decorative job.

The striping tool in service.

This new tool resembles a pair of dividers one part of which is fitted with a small ball that serves as a steady rest. In operation this steady rest is moved alongside whatever guiding edge is available, as for example the raised molding on an automobile body, while the stripe is being laid on with the fountain pen attached to the other leg of the dividers.

According to information supplied by the manufacturer's bulletin:

"The striper is filled by placing

Flint Varnish First-Coaters

FURNITURE makers who have adhered to the use of varnish in their finishing rooms, should know the merits of our Varnish Primers. These undercoatings have been the market standard for years and steady improvement has enabled them to meet the present demand for speed, economy and quality in production.

Fillcote is a new non-pigmented first-coater for use on large surfaces of walnut, mahogany and close-grained woods. It sprays freely, dries with a good body.... can be easily sanded and it does not raise the grain.

No. 664 Filler Varnish is also non-pigmented and is made for spraying, brushing or dipping and does not cloud the finish.

No. 664 Quick Flint Filler is a pigmented underbody which is used to great advantage on oak and open-grained woods.

Write for further information or demonstration at your convenience

MAYER & LOEWENSTEIN
Leaders Since 1846
4343 Vernon Blvd., Long Island City, N.Y.

the point in striping fluid, and pressing the bulb. The striper works by gravity feed; it should always be carried with the bulb up. When the ball and point are square, it has the perfect angle for feeding. When in the correct position, the edges of the striper point, all around the feed opening, are in contact with the working surface.

"Stripes are spaced as desired by adjusting a set-screw and sliding the barrel up or down in the clip as may be necessary to maintain the correct feeding angle. Double lines, joined lines, etc., can be made by spacing as necessary with the set-screw.

"In use, the striper is held firmly. The ball is first put down, against the molding or other guide, then the point is lowered to the working surface. The operator stands close to his work but holds the striper at arm's length. He does not work from the wrist, but moves his arm and body as he draws the striper along the surface.

"The point is rubbed with the fingers after each stripe is completed, to keep it moist and free of drying striping fluid. There should be no surplus fluid on the point when it is put down to the working surface. Working slowly and carefully will insure a perfect stripe; a little practice will show the beginner how to avoid making blurs or heavy spots.

"The striper should be cleaned thoroughly with thinner, after using, as any flakes of dried stripping fluid left in the barrel will clog the feed opening. The point is cleaned by running a strip of paper through the feed opening. It is a good idea to leave the striper in thinner when not in use.

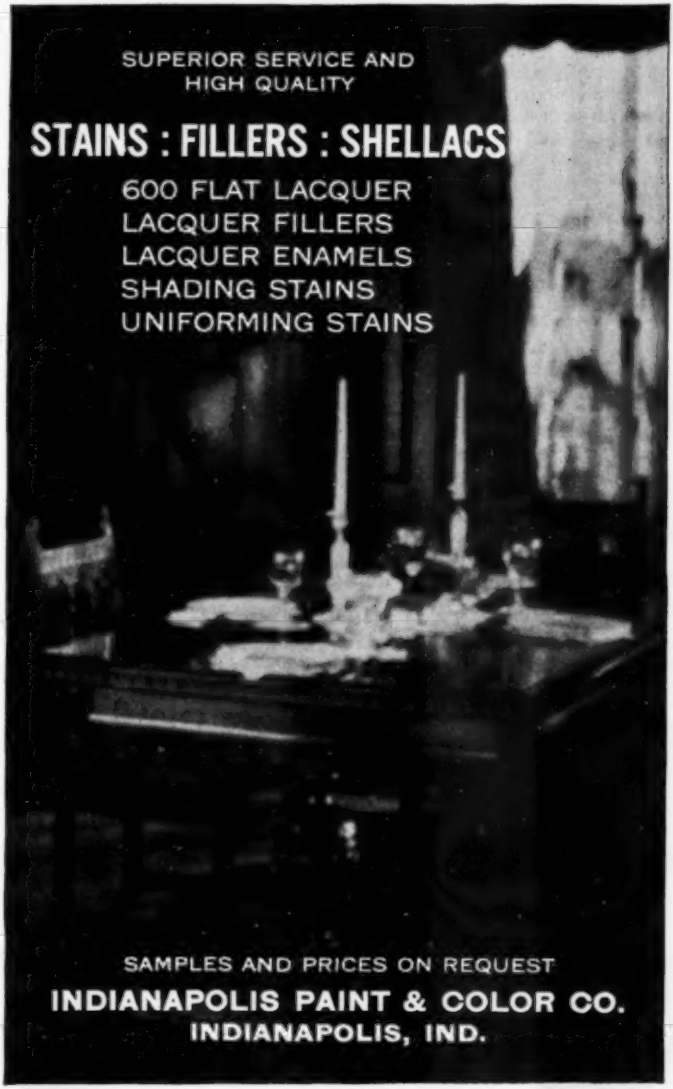
"Brushing lacquers, and the new striping materials, are ready for use as they come. Spray material may be used in the striper after thinning it to the right consistency. Be sure that the fluid is of the right consistency to flow properly.

"After making the first stripe, other stripes may be added and spaced as desired. To make a stripe of greater width than the striper point, make one stripe, then adjust the striper so as to join another stripe to it. In color work, first make the middle stripe and then add the bordering stripes at top and bottom. Gold striping fluid can be made by mixing a good bronze powder with clear lacquer."

Cellulose Nitrate (Soluble Cotton) Quickly Dissolved

Pyroxylin solutions are the main constituents of lacquers which today consist principally of a soluble cotton, gum and flexiliser combination. The gum is usually of such a nature that it is readily brought into solution, cleared up by means of a separator or filter press, and ready for use far ahead of the cellulose-nitrate solution with which it is to be combined in different proportion depending upon the plasticity, adhesiveness, or gloss required.

According to the older methods, the soluble cotton solution arrives, having been subjected to a great deal of battering around, stirring and mauling into solution. This, like the gum solutions, has to be cleaned and cleared up by means of separating or filtering methods. But the cellulose-nitrate solution of average viscosity is heavier and takes much longer to be prepared for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INDIANAPOLIS, IND.

use, than the (usually) less-viscious gum solutions.

Needless to say the gum solution finally meets its "better half," the pyroxylin solution, and then, after a quite lengthy process, they are combined in the form of a finished lacquer, ready for use.

In past years cellulose-nitrate was dissolved in such a solvent as amyl acetate alone, this being a quick solvent for it, but today, due to the high cost of amyl acetate, diluents such as benzol, toluol, naphtha, xylol, etc., are used in certain lacquers to the tune of about 60 percent or more of the formula, leaving only about 40 percent or less of cotton solvent power. There is so little solvent that for a solution as viscous as a 16-ounce pyroxylin lacquer, it would be very impractical to try to let the cotton solvent (of which we have so little in proportion to the diluents) dissolve the cotton, as we would simply have a gelatinous or supersaturated mass; to add the diluent, which would only "knock out" the cotton from the little hold the solvent has on it, would again require the tedious mixing process of putting it into solution.

Reverse the action and a much quicker solution will be obtained. Immerse the soluble cotton in the diluent mixture which immediately soaks up the cotton, although it does not dissolve it, and then, while this soft cotton mixture or paste is being stirred up or mixed in some form, the real pyroxylin solvent is added; it is surprising how readily thereafter a complete solution is obtained.

The above method, of course, is not necessary for a lacquer that is low in viscosity, say up to an 8-oz. solution, but it is very advisable to adopt in any of the more viscous grades such as a 16 or 32-oz. cellulose-nitrate lacquer.—G. O. Zeller.

Clean Containers

After you have poured enamel out of a can, it doesn't take much time to wipe off the excess remaining on the can, but if you do, you can always put the cap back on the same way it went on when it was new. The remaining material pours out better and does not evaporate down so that the last part of the enamel cakes the inside of the can, and is pitched out to fill up the dump.—Platt.

The number of motor vehicles exported from the United States and Canada last year was 543,000, but only 660 motor vehicles were imported into the United States; approximately 15 percent of our motor vehicles were exported, as against 12 percent in the preceding year.

Many men have ideas, but only a few have the decision and persistence to put them across.

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ESTER GUM RESINS

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IF YOU make products of an outstanding high grade—such as the finest furniture—for which you must have a truly superior finish, you will be interested in Thresher Products.

For 69 years Thresher Varnishes have been noted for unexcelled quality. Leading railroads use them in finishing luxuriant cars,—coaches, diners, sleepers, parlor cars and private cars.

You can afford only materials in keeping with the best ideals of your craftsmanship. Fine products deserve fine finishes—such finishes as will enhance and vivify the beauty of what you make. Therefore, we solicit your investigation of Thresher Varnishes, Enamels, Lacquers, and will gladly send samples for you to try.

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Red Lead as a Primer for Metal

Emphasizing the requirements of cleanliness, rust prevention and the employment of suitable primers, with particular reference to metal surfaces to be coated with air-drying finishes

By C. Dan Youngs

IT MAY not be amiss to have a few words regarding the preparation of metal surfaces where the material is to be air-dried.

It is difficult to catalogue the many articles of metal that are finished in industry today, since they range in size from small bolts and nuts to locomotives. Although they may vary in size, shape and finish, they all have the same fundamental, that is, that the success of the finishing depends wholly upon the adhesion or adherence of the initial or priming coat.

Naturally, due to the surface, there can be no adherence through absorption—as is the case with wood—so the initial coat must be of such nature that it will "tie into the hard surface" and, from the nature of its vehicles, be tenacious enough to withstand both contraction and expansion of the metal.

The priming coat must also be rust-preventative and rust-inhibitive, or rust will form under the film and cause it to break loose from the metal surface, with a consequent loosening of the succeeding coats. Metal will not rust unless in the presence of moisture, and the basic idea of painting metal surfaces, except so far as looks and attractiveness are concerned, is to apply films of paint to prevent moisture or moist air from reaching the metal surface.

Red Lead Characteristics

Various metal primers are in use today and some give satisfactory results, but I believe it is an acknowledged fact that the best of all rust-inhibitives is red lead. However, for many years users of red lead had trouble, due to the fact that it is a strong drier itself and, when mixed with oil and left for some time in the package, it was apt to harden to such an extent that it could not be broken up.

For a long time it was necessary to use this material within 24-hours after it was mixed, but of late years paint manufacturers have developed a product that will remain in a liquid state in the container for an indefinite time. This is usually due to the addition of some other pigment such as asbestine, but when this is added the material cannot be sold as strictly pure red lead. However, practice has proven that it is equal, if not superior, to strictly pure red lead. due to its better working qualities. When properly combined, this mixture is as lasting and as good a rust preventative as the so-called strictly pure red lead.

The specific gravity of red lead is such that when used by itself it is apt to run or sag, and cannot be extended as far as other paints. For this reason a lightening of the specific gravity through the admixture of other pigments, such as asbestine, gives a greater spreading capacity with less tendency to run or sag. It forms a

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Twenty-two shorts were never meant for big game—nor will cheap lacquers properly dress your products for the market.

Berryloid is sales ammunition that packs a real "kick". This finish carries more than a hint that surface quality is backed by good materials and superior workmanship.

Prospective buyers will, as a rule, take your word for features of construction but they judge the finish by eye-measure. Use, therefore, a material that brings out the best in your product, one that is easy and inexpensive to apply, yet will wear, and wear. That's Berryloid—the high-luster lacquer.

This product *does* take less polishing to bring out the luster and the finish will not rub off. Try it and see.

BERRY BROTHERS

Varnishes Enamels and Lacquers

Detroit, Michigan *1858—70th Anniversary—1928* *Walkerville, Ont.*

hard tenacious coating and will withstand knocks and blows that would cause almost any other paint to chip off.

Where a permanent lasting coat is desired it can almost be assured through the use of a red lead primer, but red lead should never be used as a finish coat; exposure to gases or atmosphere turns it into a lead carbonate or sulphate. Where an exposure is encountered, it should be re-coated within at least 48 hours.

Clean Surface Necessary

As in the case of all finishing, the surface must be absolutely clean. This is more important even on metal than on wood, because of the probability of a thin film of grease being left on the metal after the process of manufacture. Any grease or foreign substance on metal if left under the priming coat will nullify all the careful choice and application of the finishing materials.

New Equipment for Grinding, Buffing and Polishing

The Stow Mfg. Co., Inc., Binghamton, N. Y., announces the Stow direct-connected suspended unit as shown in the accompanying cut. This unit includes a 1-h.p. ball-bearing motor mounted to hang in an inverted U-iron, and a connected flexible shaft for attachment to the angle head, as shown in the illustration. The flexible shaft may be used for giving rotary motion, directly from its end to rotary files, sanding discs, abrasive wheels, buffing and polishing pads, etc. This assembly is arranged for a quick interchange of attachments. It may be suspended over the operation, thereby making it particularly convenient for certain kinds of work.

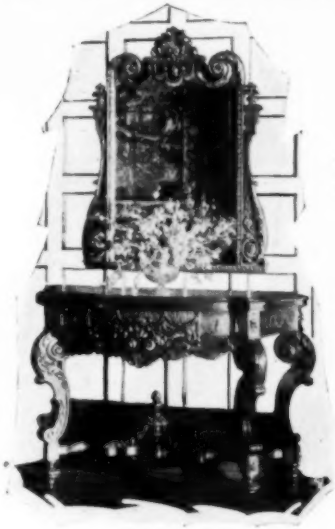
Can be used with or without disc head which is driven by flexible shaft connected to suspended motor.

Colored Novelties in Wood

There has been established in Seattle, Wash., a woodworking and finishing shop that is unique in its operation, production and distribution methods, inasmuch as the products are invented, manufactured, colored and sold by a small unified organization.

It is called the Commercial Art Studio, on account of the artistic shades and coloring—to suit individual tastes of customers—applied to wooden products, fashioned of plywood. Wooden articles of every type and description are scroll-sawed from the short ends of fir plywood, which are secured at reasonable cost from a local mill.

One of the partners in business develops, produces and decorates the finished articles. Formerly a commercial artist with an outdoor advertising concern, he is now applying himself to supplying certain specific needs of people in many walks and stages of life. The other partner attends to a large portion of the outside con-



Command Public Favor by using

MODERN FINISHING MATERIALS

Finishing materials are now a matter of grave concern, for the manufacturer who ignores the trend of the times in modern finishing practices, must fail ultimately in commanding public favor. Many makers of fashionable furniture have solved the problem of customer favor by finishing their pieces with. . . .

Amerilac No. 96 Gloss and

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. . . the high-grade finishes for high-grade furniture. These materials satisfy in results and the smoother application attained at **lower production costs.** They were developed by careful study of all factors entering into the successful employment of finishes.

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tact work, the sales and the distribution.

Included in the output of this shop are colored wooden toys for the baby, articles of wood for window decorations to suit any type of retail store, hat stands for milliners, interior decorations, counter displays, novelties for bachelor's apartments and clubs, etc. Most of the painting, decorating and finishing is done with the modern spray gun, the artist-manufacturer generally using four sprayings of different colors or shades to complete each article and emphasize all of its artistic detail.

In mixing and blending combinations of color the artist manufacturer is at his best; it is this that gives his manufactured products their chief sales appeal. The front of the shop is a regular store and sales room where finished articles completed in the rear are collected for inspection and sale. Outside salesmen of the organization work up trade with prospects, such as shop-keepers and retailers who may resell or use the window trims and interior decorations to give luster and eclat to their own stocks of merchandise.

Window displays put this shop on a footing with any other modern retail establishment. These artistic "trims" are designed to pull business from passersby who may be intrigued by the numerous novelties displayed. One window contains unpainted wooden products, while the other is a mass of high lights and interesting combinations of color that glisten from the spray-finished plywood products—C. M. Littlejohn.

Dependable
WOOD LACQUER
Made Since 1857
At our works—Newark, N. J.
Pioneer Lacquer Manufacturers
CHAS. COOPER & CO.
90 Worth St., New York --- Works Newark, N. J.

STAINS
Dewey Stains Have Been
The Choice of
Leading Manufacturers
For Over Fifty Years
HENRY A. DEWEY CO., INC.
401 Concord Ave. New York
Established 1875

Paints Are Ancient

The use of pigmented materials similar to our paints is very ancient. When the tomb of Tut-Ankh-Amen, the earliest trace of living mankind which has been uncovered, was opened, many objects decorated with paint were found. Practically every modern discovery of ancient mankind has resulted in the unearthing of painted objects.

Many prehistoric caves and other abodes of primitive men have the walls decorated with pictures of animals and men, done in paints, usually of brilliant hue. It is probable that these paints were made from natural mineral pigments, in much the same way as the Native American Indians made paints for their totem poles and for the protection of their bodies from the sun's rays.—R. E.

Sanding Shellacked Surfaces

Sandpaper is probably the best material to use for smoothing out a shellac surface, about 4/0 or 5/0 paper should be used. It can be used either dry or moistened with water or oil. Steel wool is

Dr. Willson's Dust and Spray Mask

Breathing dust and spray is sure to cause sickness unless the nose, mouth, throat and lungs are protected. Dr. Willson's Dust and Spray Mask allows breathing comfort and gives maximum protection by filtering dust and spray particles from the air you breathe.

Price $2.25 each, including 12 filters. Extra filters, $1.15 per box of 100. At your supply dealer, or sent postpaid by —

WILLSON GOGGLES, Inc.
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If you need protection from dangerous and penetrating fumes, ask for particulars on the "Willson Fume and Smoke Mask," and state the nature of your work.

Use as an undercoater — or as a final finish

#300 Finishing Lac!

A finishing material that combines the qualities of shellac, lacquer and quick-drying varnish, with easy sanding features. Equally satisfactory results when sprayed, brushed or dipped.

Here is a high quality, low priced finishing material, with capacity for wide application, that fits in with today's exacting finishing requirements.

Will you inspect a quart sample at our Expense?

E. T. STILLE & CO.

2343 Greenview Ave.

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not so good for sanding any sort of finishing surface, because of the danger of small particles of the wool becoming loose and sticking into the finish.

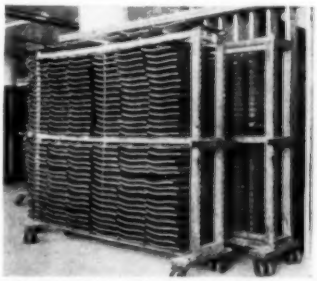
There is no special method to be followed in cleaning up a shellac surface after it has been sanded. Care should be taken to remove all the dust and have the surface clean before the next coat is applied. That is about all the precautions that need to be taken. —L. S. B.

Confidence is that intangible something—that precious goodwill—for which businesses get so much money when they sell out.

One of the big secrets of the super-salesman is to show one thing at a time and to concentrate attention on it.

Courage has been defined as that quality of mind which meets danger or opposition with intrepidity, calmness and firmness.

The first appearance of a product for sale, generally forms an important impression in a prospective buyer's mind.



Clean portable drying racks, built of strong wood frames, reinforced with iron braces and equipped with convenient wood handles. The finished articles rest on slender round iron rods, which form the "shelves."

THE LEADING PLASTICIZER

Here is a plasticizer which excels in uniform, dependable qualities.

NON-INFLAMMABLE
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COLORLESS ODORLESS

Samples with literature and prices upon request

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290 FERRY STREET NEWARK, N. J.

INDOL
TRADE MARK

Industrial Finishing

Issued tenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

PRACTICAL PUBLICATIONS, Inc.
Publishers

Office; 802 Wulsin Bldg., Indianapolis, Ind. Telephone, Riley 6771. President, A. T. Gaumer; Vice-President and Managing Editor, W. H. Rohr; Secretary, R. E. Sults; Treasurer, E. A. Dosch.

Subscription rates, $1.00 per year in U. S. and possessions; $1.50 per year in Canada and $2.00 per year in foreign countries.

Advertising rates on application.

EDITORIAL

Gold Leaf; Gold Sizing for Lacquered Surfaces

At the present time the painters of automobiles and commercial vehicles are experiencing considerable trouble in permanently attaching gold leaf to a surface finished in lacquer, as it soon wears off. Heretofore there has been no difficulty inasmuch as the gold leaf was applied to the automobile body after it had been rubbed down and just prior to the application of the coat of finishing varnish.

With a lacquer job, the gold leaf is applied after all coats of lacquer are on, and the latter does not seem to afford as good a base for the gold sizing as does rubbing varnish. Furthermore, in order to protect the gold leaf it is necessary to pencil over it with varnish, which is not only unsatisfactory from a wearing standpoint, but also costly from a labor point of view.

What the automobile trade desires is a sizing such as will firmly attach the gold leaf to the lacquered surface, and then a thin transparent lacquer which can be applied over the gold leaf, covering the entire panel or side of the vehicle body, if so desired.

Readers of INDUSTRIAL FINISHING are invited to submit their experiences or any information of interest or value on this subject.

Specific Information on Merits of New Finishes

Some finishing materials, new to the buyer, can be purchased strictly on faith, the word of the salesman, the correspondence or advertising literature of the firm behind the goods being virtually a guarantee of satisfaction—provided the material is used properly.

But even when buying goods from reputable concerns it is often desirable to put samples of material through certain tests to prove their value to one's associates or to determine more closely the margin of safety in endurance, permanency of color, luster, etc., or to learn how well the new material may meet certain unusual conditions of manufacturing, handling, shipping or ultimate service.

Facilities for testing finishing materials before and after application have not only been greatly increased during recent years, but they have been made more easily available to all users of finishes. There has been developed for such purposes, apparatus and methods that may be employed by the user in his own establish-

Smart

What is it that makes the well-dressed woman smart — the finishing touches!

What is it that makes the peacock proud and beautiful — the colorful finish of his plumage!

So it is with your product. The way you finish it either places it in the mediocre class or the smart class — and the difference is always reflected in sales!

Our lacquers assure a better finish — smartness — greater sales. They give a tough, mar-resisting surface that will not crack, peel, check or shrink.

It's easy to make a test. Will you do it?

"No Tampering With Quality"

The
ROCKFORD VARNISH
Company
ROCKFORD, ILL.

ment, or which may be used in a laboratory supported or patronized by several industrial concerns.

Really, from a practical business standpoint, the user of finishes need not be so much concerned about the names and percentages of ingredients used in the manufacturing of material, unless it is to learn if or to what extent the material may be "doped" or "loaded" with some one or more cheap ingredients which the buyer knows are very undesirable for one reason or another.

Ordinarily, what chiefly concerns the user of finishes is how the new material will act in production—its coverage per gallon, its body, its luster or sheen, rubbing qualities if it is to be rubbed, rate of drying, its susceptibility to slight variations in atmospheric conditions, etc.—and how it will stand up after it has left the factory, as for example, its general durability, resistence, to wear, permanence of color, etc. Usually it is costly to obtain specific and reliable information on these characteristics by actual factory trial and by the test of time and service.

If, however, a firm can submit data to a laboratory and get an accurate and unbiased report on it within a few days or weeks, the laboratory service may be well worth its cost. Then, what to expect in the way of results during and after production becomes a known factor. Incidentally, the laboratory report may disclose one or more suggestions for improvement in the finish user's methods or equipment, and in the end this service may lead to the making of substantial savings in the manufacturer's cost of finishing.

Water White Lacquers No. 82

For Gold
For Silver
For Brass

Always Dependable

Established 1857

CHAS. COOPER & CO.

50 Worth St., New York Works Newark, N. J.

U. S. Finishing Materials Exported

Exports of paints, pigments, and varnishes have been increasing during the past few years and their value is many times the value of imports. Imports of mineral and chemical pigments in recent years were valued at $2,000,000 to $3,000,000 while paints, stains, enamels, and varnishes were valued at less than $1,000,000. On the other hand, exports, of paints, stains, enamels and varnishes have been valued at about $10,000,000 during each of the years 1925 and 1926.

The increasing popularity of nitro-cellulose lacquers accounts for some of the increased export of these products. The United States does not export mineral pigments to any great extent, but the export of chemical pigments amounts to several millions of dollars. Carbon black produced from natural gas is the chemical pigment showing the largest export—39,210,389 pounds, valued at $3,622,907, in 1926.

The rate of evaporation of a solvent or a mixture of solvents affects its value in the preparation of a lacquer, owing to the detrimental effect on the smoothness of the lacquer film when the solvent evaporates too rapidly to allow the film to level out properly after application.

Knowledge is Power

Superintendents & Finishing Foremen:

You are holding your present position because of your *knowledge* regarding the needs and requirements of your manufactured articles .... but how can you *know* that the lacquer you are now using is the best suited to your products and the most economical if you have never tried ours. All we ask is that you test and try

Roxalin Flexible Lacquer

for

PERMANENT ADHESION

"Clear Lacquer 1510" and "Lacquer Enamels 1510" (in all colors) can be stamped and drawn without flaking or peeling; gives glass-like hardness; enduring toughness; takes a high buff easily.

COMPLETE LINE
WOOD AND METAL
FINISHING
PRODUCTS

UNIFORM
PRODUCTS
DEPENDABLE
SERVICE

ROXALIN FLEXIBLE LACQUER COMPANY
INCORPORATED
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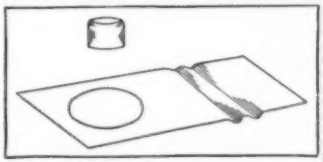
LONG ISLAND CITY
NEW YORK



Brass sheet, *first* lacquered *then* stamped and drawn.

Gentlemen:

Kindly send brass sample as illustrated, so we can test it for permanent adhesion and flexibility.

Name .....

Firm .....

Address .....

The Auto Refinishing Shop

Calling attention to the possibilities of automobile painting as a business enterprise and explaining how to establish and maintain the business and the shop, with special notes on shop location, layout, equipment, heating and ventilation

By W. H. Martindale

SINCE the beginning of the automobile refinishing business the great majority of automobile painters have, for one reason or another, failed to make use of many legitimate methods used by other business establishments to increase the demand for the painter's services. In far too many instances the automobile painter has looked on his business from the viewpoint of merely taking care of such jobs as found their way to him, instead of laying plans for increasing the number or quality of the jobs.

Advertising has proved its worth to every type of business enterprise, and there is no reason why it cannot be used profitably by the automobile painter, for he certainly has a great deal to offer in the way of beauty, protection and utility to automobile owners.

Working from a pressure drum.

The modern automobile paint shop is being run on the same underlying business principles as those used in any other line of business. Appropriate advertising is one of the mediums for establishing, increasing and maintaining a demand for the services of the automobile refinisher.

Many methods may be used in successfully advertising the automobile painting business. In the first place, the painter should choose an easily accessible place of business on a prosperous street in a thriving locality. While it may be true that "the world will make a beaten path to the door of the man who makes a better mouse-trap than anyone else, even though he live in the woods," in painting automobiles as in conducting most any business enterprise, it pays to be located where people can easily find you.

Select Good Location

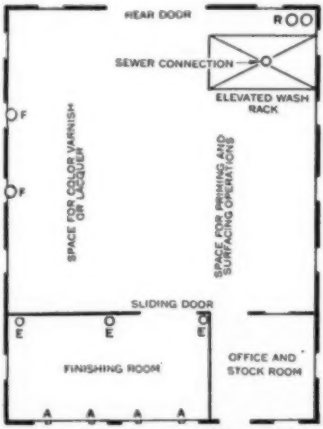
Keep out of the alleys, sheds, barns, open garages and other places that give the impression of unclean, unsatisfactory work. Remember, you are in the business to attract customers and make money. Keep on the open, busy streets, if at all possible, where other high-grade, good-paying business institutions are to be found.

Something must be spent for advertising the business if it is

to grow and succeed. Why not consider a good shop front on a busy street, where people can see every day in the year that you are in the automobile refinishing business, as a part of your advertising expense? The money could hardly be spent to better advantage.

Follow the lead of such experts in human psychology and advertising as the chain stores, and paint the front of the shop in a pleasing but distinctive color, so people will remember you by the color of your shop, if they don't happen to remember your name.

The place selected to start a repaint business does not have to be a mammoth one, but it should be sufficiently large to easily handle the work—depending upon the size of the city and the location of the shop in it, as well as upon the number of competitors in the locality. Don't make the mistake of getting into a place that is too small for it is rather expensive to move, once you have become established.



Suggested plan for automobile refinishing shop

A, A—Fresh air intakes
E, E—Foul air exhausts
F, F—Window exhaust fans
R—Paint removing apparatus.

First class work cannot be done in any old back shed, barn or open garage. Cleanliness and warmth are essential to good work, and these conditions cannot be obtained in such makeshift places. Of course, if no other place can be obtained and a barn or back shed can be fixed up so to make it clean, light and warm, very good results can be obtained, but as a usual thing it is very difficult to do this in any but a haphazard way.

Floor Plan Layout

The next important step is to lay out the shop so that each operation will have a definite place in which to be performed—so the work will progress smoothly from the beginning to the end. Much of the profit is taken away when the work has to be shifted several times before it is ready for finishing. Every time a job is moved during the process of finishing, it means loss of time and money, therefore lay the plans carefully.

Of course, it is not possible to give any definite set of recommendations for laying out a shop that will fit every building or every set of conditions. The general principles to be observed are shown in the accompanying diagram, however, and the suggestions that follow are fundamental ones which, with a little thought, can be adapted to any set of conditions.

The cleaning pan should be located near the point where the automobile enters the shop, and as far as possible from the finishing room. This is to save waste motion and also to keep as much dirt and fumes away from the

The Progressive Finishing Foreman is using

DUBL-DRI

LAKR-ENAML

VARNISHES AND ENAMELS
SATIN—FLAT—GLOSS

This original lacquer finish dries in one to two hours, hardening sufficiently to permit packing and shipping on the following day.

A saving of about one-third to one-half is effected by adopting **DUBL-DRI.**

Eliminates offensive odors and fire hazards.

Produces a satisfactory finish from satisfied workmen, **possessing all the advantages of lacquer with none of its objections.**

Also Manufacturers of

Impervilac Brushing and Spraying Lacquers,

Satin Finish (clear) and Pigmented Lacquer Resisting Undercoaters,

High Light Pastes, Etc.

Great Lakes Varnish Works
Incorporated
2207-35 North Crawford Ave.
CHICAGO, ILL.

final finish as possible. The construction of the cleaning pan and the equipment that goes with it will be described later.

As much open floor space as possible should be allowed between the cleaning pan and the finishing room, to allow the job to be put into one position after being cleaned and left there until all the undercoats have been applied, and it is ready to go into the finishing room for the final coat. This also, is just another precaution to save time and money in lost motion.

A most important part of the shop is the finishing room itself. If the shop is large enough, a separate room which is light, airy and dust-proof should be constructed. It should be placed in the lightest part of the shop and the partitions should contain as much glass as possible to give more light. Few doors should be the rule in this room, and these openings should be made as nearly dust-tight as possible.

The walls and ceiling should be of such construction that dust can be washed down frequently, for dust will slowly accumulate on the walls and ceilings, later falling on the work, if it is not removed.

Shop Ventilation

Plenty of ventilation is necessary to carry off the fumes from the drying finish, and to supply workmen with good air. Care should be taken however, not to get this ventilation by the opening of windows and doors, for this will not only allow a great deal of dust and dirt to get onto the work but will also give rise to drafts which are likely to chill the varnish and prevent it from flowing as it should.

(Continued on page 118)

Devoted to—
Questions
Answers
Suggestions
Comments and
Discussions on
Specific Problems

Questions and Answers

Information Service

Every issue of *Industrial Finishing* contains a wealth of practical information on various subjects of interest to users of finishes and finishing equipment, but from time to time new problems and questions arise, which demand prompt and authentic information. *Industrial Finishing* is in position to service inquiries, and the editor invites all individuals and concerns in the industry to make known their wants. Every effort will be made to supply the information desired, at no cost to you.

Questions are invited in regard to:

Finishing-room troubles or problems;
Where to obtain certain materials, supplies or equipment;
What methods or materials to use for certain results.

Additional comments or suggestions regarding questions, answers or articles appearing in this section, are invited.

Case Hardened Wood

Everyone knows the value of **Case Hardened Steel.**

The advantages of a similar wear resisting surface on Wood are obvious.

Many manufacturers of high grade furniture and pianos are already familiar with the merits of the Wood Lacquer which accomplishes this fact.

The **Permanent** Finish for **Quality** Furniture

MAWALAC

Let us give you further information or have one of our Wood Finishing Specialists call on you

MAAS & WALDSTEIN CO.
METAL & WOOD LACQUERS AND ENAMELS

Executive Offices and Plant, 438 Riverside Avenue, Newark, N. J.

Chicago Office and Warehouse
1115 W. Washington Blvd.

M. & W. Co. 1876

Los Angeles Office and Warehouse
1212 Venice Blvd.

R. C. Flanigan, Southern Representative
P. O. Box 222, High Point, N. C.

Questions and Answers

Why Lacquered Brass-plating Spots

Referring to the question published on page 93 of April issue, as to "the cause of dark spotting-out on brass-plated cast-iron castings" this can best be answered by an electro-plater. He would have informed E. W. C. Co., that the castings were probably full of very small pin holes and, when brass plated, the cyanide used in brass-plating solutions enters these holes and if not boiled out in very hot water, the brass will spot out, whether it is lacquered or not. I have had 16 years of plating experience and have helped many a concern out of its troubles in the plating line.—Chas. O. Werft.

The difficulty, we believe, is due to one of two or both causes; either the surfaces plated and finished with lacquer have not been thoroughly cleaned after coming from the plating bath and small amounts of corrosive material have been left in pores of the metal, or the lacquer used may not be entirely neutral, or both.—The Cleveland Varnish Co.

To Remove Greasy Film

Referring to P. F. Co.'s inquiry, as published on page 85 of March issue, a good method to entirely remove all traces of oil and grease from the surface of rubbed lacquer work is to first wipe the surface (after rubbing) as dry as possible with clean, dry cloths. Then wipe it off with a special cleaning solution, of which the formula is given below, and following that, wipe the surface again with perfectly dry cloths. This will remove all traces of oil and leave the surface perfectly dry and clean.

The solution referred to is made as follows:

Heat one gallon of water to the boiling point. Into this dissolve two packages of Ivory soap flakes, or two bars of a neutral soap, such as Castile, Ivory, or Fairy soap. When this has cooled down, add one gallon of *white vinegar* (it is very necessary that white vinegar, and not apple-cider vinegar be used); then add ½ gallon of rubbing oil and a quarter gallon of 26° ammonia. Next stir in a quart of wood alcohol and then put in ½ gallon pure turpentine. Mix all ingredients thoroughly together before using.—R. L. Masterson.

Lacquer Pin Holes

We have trouble with pin holes in hot weather; the rest of the year the lacquer we use works fine. Am sure you can give several reasons for this.—C. G. E.

Without a thorough investigation on the ground it is difficult to assign any definite reason for the pinholes in your lacquer. It is my opinion, however, that this trouble is primarily due to your lacquer drying too fast on the top surface during hot summer weather.

This causes bubbles to form in the lacquer, which either break after the lacquer loses its flowing power and remain as pinholes, or

whose tops are cut off during the rubbing operation and appear as pinholes in the finished work. The addition of slower evaporating solvents to your lacquer will probably reduce this trouble.

Bubbles or pinholes in lacquer are also formed at times because of improper mixture of air and material, because of holding the spray gun at an improper distance from the work, because of holding the gun at an angle and for similar reasons. Bubbles from these causes, however, should be as prevalent in winter as in summer.—C. F. Merrifield.

Spotting of Lacquer-Finished Copper-Plated Caskets

Our customer is a large manufacturer of metal caskets. The difficulty in question applies to a plated finish on copper. After the casket (copper) is copper plated with a statuary bronze finish and the lacquer coat applied, the finish appears satisfactory, but after a period of time, say, three to six months, dark spots appear on the finish and a general dullness destroys in a large part the luster of the original plate.—P. V. Co.

Very often in copper plating, the cyanide in the plating bath is kept very high when they are doing that type of plating. This cyanide tends to creep into the pores of the metal and this would spot the finish and destroy the luster of the original plate.

The best way to overcome this trouble, at least the way we have usually been able to overcome it, is by soaking the work after it comes out of the plating bath in a solution of platers' compound for about one or two hours. This platers' compound is made up in the proportion of about seven or eight ounces to the gallon of water and it sells at the price of 9½c per pound, in barrel lots, f. o. b. Philadelphia.—International Chemical Co.

I understand that it is quite an art to make a satisfactory clear lacquer for copper which will not allow the defect you mention, to develop. It is thought that shellac gum, ester gum and other similar gum solutions may contain enough acids which in conjunction with the small quantities of moisture that penetrate every lacquer or varnish film, in time may produce a chemical action on the copper and cause it to darken in spots. There is also a small possibility that unstable nitro-cellulose may have been used which broke down upon exposure and generated chemical compounds that reacted on the copper.—L. F. Worlendar.

A Quick-Drying Stain-Filler For Use With Lacquer

In February issue on page 89 I notice an inquiry from L. N. W., of So. Australia, which reads as follows:

"In connection with use of nitrocellulose lacquers on wood, we are interested in a filler, natural and colored, that can be sprayed on, dries quickly to obviate the over-night drying, yet is slow enough to be wiped off. Coloring to be sufficiently strong so that the staining and filling is done in one operation. This feature is particularly necessary for cheap and medium grade work, and until such is available, manufacturers here in Australia refuse

to use lacquer except for high-grade work, and mass production."

In a brief answer to that inquiry, on the same page of the same issue, R. L. M. makes a statement that fillers of the type mentioned by L. N. W., have not been successful. I must contradict same, for there is a well-known preparation, made by an advertiser in this magazine, which is a combination stain and filler with a lacquer base, incorporated with a water aniline. It does not fade, and it wipes off with greater ease than many of our regular fillers. I have used it and at present it is being used by some of the largest factories where it has proved, beyond any doubt, to be a complete success. If L. N. W. wishes any information about this material, I will be glad to correspond with him direct.—Philip Myers (foreman finisher).

Finishing Fir to Kill Raised Grain

What is the best manner to prime fir wood for both oil painting and lacquering? It is our desire to cover the grain, eliminating the raised grain effect.— T. W. C., Inc.

For the finisher fir wood has the disadvantage of having a hard, raised grain with soft, spongy, depressed sections between the grain. It is practically impossible to sand the wood smooth, consequently a surfacing material must be used where it is desired to prevent the raised grain from showing in the finished work.

The priming coat on fir wood should be sufficiently "long" in

ZELLAC

What PRICE Lacquer?

Industrial users of lacquer must sometimes wonder just *what* they're paying for. Is it a "name"? Or perhaps "advertising"? Or "public demand"? Or is it *lacquer?*

If you're convinced that you're buying *lacquer*, then you know your own business enough to realize that your first question is: QUALITY? And your second question is: PRICE?

You hear many answers, but they vary only in the language used. They always claim — *best* quality! — *lowest* price! Then the conversation is apt to drift back to "name," "advertising," "public demand," or what have you.

But you're not buying answers. You're buying *lacquer*. So you sensibly *ask to be shown!* After all, you point out, you're paying — or *ought* to be paying — for lacquer!

Well, we agree with you — the efficient industrial buyer keeps his mind on what he's buying, and we want to get together with you on that basis! If you will describe your finishing requirements, we'll deliver you a formulated trial order that *you can test for the lacquer qualities most economical to your special production needs.* No talk. Just give it an unmerciful testing! Then we'll quote you a price. An honest-to-goodness price.

Zeller Lacquer Mfg. Co., Inc.

Zeller Building

20 East 49th Street New York City

Stockrooms and Offices at:

Chicago: 551 W. Lake St. *Los Angeles:* 786 Ceres Ave. *San Francisco:* 1039 Harrison St. *Denver:* Ormor Sales & Supply Co., 503 Fourteenth St. Distributors. *Wichita:* Ormor Sales & Supply Co., 452 N. Main St. Distrib'rs.

ZELLAC

ZELLAC

THE IDEAL FINISHING MATERIAL

for furniture, radio, and cabinet manufacturers

Spray, brush or dip it, the same superior results are obtained.

"Finisheen"

It's tough, dries fast, requires little sanding and gives a lustrous finish. Finally, it gives the effect of a rubbed varnish job at 40% saving in finishing costs.

A working sample will prove convincing — send for it TODAY!

THE
MARX & RAWOLLE
CORPORATION
Est. 1849

125 Ann St. Chicago — **551 Fifth Ave. New York**

Manufacturers of
VARNISHES—LACQUERS—STAINS—
ENAMELS—SHELLAC

oil, that is it should contain enough oil to satisfy the natural thirst of the wood and insure a good bondage of the primer to the wood. Where lacquer is to be used as the finishing coats, the primer should be so constructed as to withstand the solvent action of the lacquer thinners without lifting or blistering the primer. The primer should be allowed to dry thoroughly before the next coats are applied.

Over the primer coat should be applied a surfacing material similar to the sanding surfacers used on automobile bodies. One or more coats should be used according to how thoroughly the tracery of grain is to be eliminated. Either lacquer-type or oil-type surfacers can be used, although the oil-type surfacers will fill more with the same number of coats than the lacquer type.

This is because the paint or oil-type surfacers contain a larger proportion of solids than lacquer surfacers. Paint surfacers can be obtained which dry fast enough for two coats to be applied in one day. Lacquer surfacers can be applied several coats in one day.

After the surfacer coats have been dried hard, which usually requires over night, they should be thoroughly sanded to make the surface smooth. After this operation the finishing enamel or lacquer coats can be applied in the usual way.

Where oil enamels are to be used for the final coats, lacquer surfacers should not be used, as it is considered bad practice to sandwich lacquer coats between two or more coats of the paint or oil type.

Suitable primers and surfacers for fir wood can be obtained from the paint and varnish manufac-

turers who advertise in INDUSTRIAL FINISHING.—W. H. Martindale.

Paste Paints for Tumbling

I wish to use tumbling paste paints for tumbling the finish on such articles as small wood balls and beads. I need to use several shades and colors and do not find any paint manufacturers who have such goods in stock or care to make it up unless for a big order. I understand that users generally mix it themselves.

I am familiar with the use of the paste and getting the finish. Would like to get information regarding the materials used for the base, colors to use, mixing, etc. I wish to use bright red, blue, yellow and peach. For the finishing coat, I would use a tumbling varnish which I can readily obtain. It would be a great help if I could get this information soon, as I have work and orders waiting.—A. J. B.

We are not familiar with the use of paste colors for use in finishing beads and other wooden turnings by the tumbling process. We know of several finishers of such articles who use ready prepared tumbling enamels which they secure from paint and varnish manufacturers.

These enamels are solid covering and two or three coats are usually tumbled on, each coat being dried, usually by artificial heat, before the next coat is applied. Such enamels usually dry with a luster and no finishing varnish is required to give the necessary gloss.

We believe quick-drying tumbling colors might be made by the individual user by mixing the desired shades of paste colors with a solution of white shellac to

Finishes for Every Finishing Need

ENAMEL
UNDERCOAT
SHELLAC
STAIN
LACQUER
REMOVER
WAX
FILLER

JAMES B. DAY & CO.
CHICAGO

Featuring
Flat
Finishes

Lacquers or Varnishes
Both have full body
Flat—Eggshell—Velvet

ELIMINATES EXPENSIVE RUBBING

OUR GUARANTEE
Send for five gallons—If not as we claim, return it.

Jamestown
Wood Finishing Co.
Jamestown, N. Y.

STAINS FILLERS J C W F PAINTS

form shellac enamels. Paste colors suitable for mixing with shellac can be secured from lacquer manufacturers.—I. F.

Brushes For Finishers

No definite information can be given regarding the kind of brush to use for shellac, filler, varnish or lacquer, as the individual taste of the workmen, the size of the surface to be coated, the viscosity of the material being applied, and various other questions all must be taken into consideration. For all coats except color varnish coats and finishing varnish coats on an automobile body, it is customary to use a brush that has considerable stiffness to it, although for color varnish and finishing varnish coats, a very soft brush that will hold a lot of material should be used. Lacquer should not be brushed except on very small objects, but should be applied by spraying.—Hugh Maxwell.

Walnut and Mahogany on Birch

For finishing birch end tables and novelty furniture in imitation of real walnut, I first make up what I consider a good walnut colored stain as follows:

Walnut water stain, No. 1305...4-oz.
Nigrosine black.....2-oz.
Bichromate of potash.....1-oz.
Water .....2 gallons

Apply this stain by brushing, spraying or dipping. Let dry about 24 hours. Then give one light wash coat of shellac (made up of one part shellac to two parts of alcohol). Let dry about five hours and sand with No. 5/0 sandpaper.

Put on a second coat of shellac

Special Ovens For Auto-Body Finishing

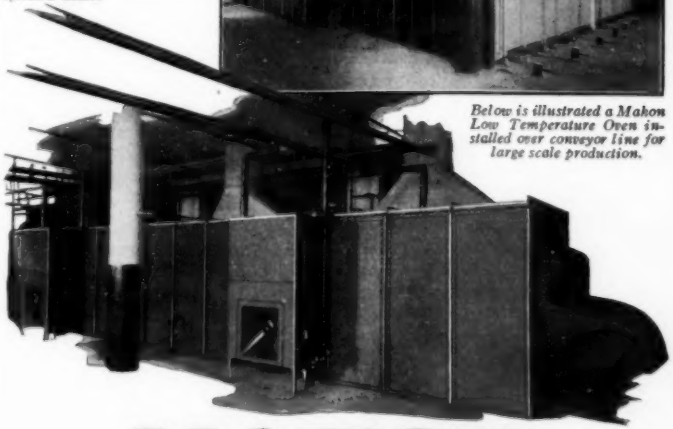
Proper drying, insured by a proved type of oven installation, is now available through the use of Mahon Industrial Ovens. These ovens are adaptable to conveyor lines where it is not desired to remove the body from production line during finishing operations. Their standard sectional construction permits dismantling and moving without loss or damage. Fire safety is insured by the entire elimination of wood and the use of an insulation of 1½" air-cell asbestos board fully protected with metal covering. This metal sheathing allows flushing with water when cleaning. Get the full facts—the approval of the leaders in the field has been gained by Mahon through an understanding of their requirements and a close co-operation with plant layout men.

Use the Experience of Mahon Engineers on Your Next Oven Installation.

THE R. C. MAHON COMPANY
8650 Mt. Elliott Ave., DETROIT, MICH.

A mammoth Low Temperature Oven installed in the Fisher Body Corporation's plant. Bodies come off conveyor line into this oven on trucks running on tracks through automatically operated doors.

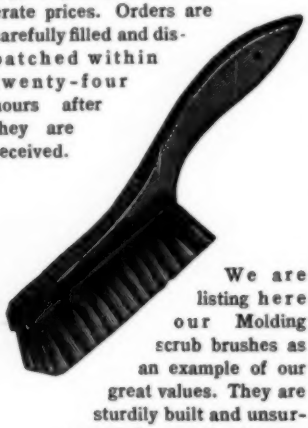
Below is illustrated a Mahon Low Temperature Oven installed over conveyor line for large scale production.



MAHON
INDUSTRIAL DRYING OVENS

Send to Watson's for your painting supplies

WE CARRY in stock everything needed in modern finishing shop. Our merchandise is of the highest quality listed at moderate prices. Orders are carefully filled and dispatched within twenty-four hours after they are received.



We are listing here our Molding scrub brushes as an example of our great values. They are sturdily built and unsurpassed for rough cleaning purposes.

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Chicago Scrub (like cut)	$4.50	$0.45
Reversible 5-row scrub	5.60	0.55

Prices are Net F. O. B. Chicago.

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"The Paint People"
164 W. Lake Street Chicago, Ill.

Please send me your catalog No. 48 on painters' supplies.

Name .....
Firm .....
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I F-5 Gray

made up of half orange shellac and half white shellac (cut half and half with alcohol). Let stand until the next day and then sand with No. 7/0 sandpaper. Blend together gloss and flat lacquer to the desired sheen wanted. This will give a beautiful finish on birch.

If you want to rub the tops of your articles I would advise purchasing a flat lacquer that will stand a little rubbing. Then, after you have applied your flat lacquer and perhaps you want to shine up the tops a little bit, you may do so by having a good flat lacquer which will stand a little oil rubbing.

The stain for a pleasing dark mahogany finish on birch is made as follows:

Mahogany water stain, No. 537..1-lb.
Antique mah. water stain, No. 538.....1-lb.
Potash .....¼-lb.
Water (boiling).....8 gallons

One can obtain a more reddish tone or a more brownish tone by using one or the other of the ingredients in larger or smaller quantities according to the color desired. After staining, finish this mahogany job the same as has just been recommended for the walnut finish.—L. R. Lant.

The American production of motor vehicles in 1927 slightly exceeded 3,500,000 units.

Paasche Wins Patent Suit

The Paasche Airbrush Co., Chicago, Illinois, in a clear cut decision, won its patent suit on pressure-feed air-painting units as defendant in Alliance Security Co. vs. Roman Paint Co. in the U. S. District Court, Third Division in equity 1473.

Decision was rendered April 10th by Federal Court Judge Saint Sure at San Francisco, Calif., who decided, in confirming the Master's Report, that the construction of Paasche pressure feed painting units represented no infringement.

"This article is written with the hope that it may throw a different light on the difficulties faced in present day sheet-metal cleaning, such as employed prior to the application of all pigmented paints and nitro-cellulose lacquers on metal surfaces."—

Geo. E. Heron

Cleaning Sheet Metal to be Finished

Revealing some of the troubles caused by improper cleaning of metal surfaces, explaining specifically how to keep cleaning solutions and rinses in first-class condition and pointing out why this is so all-important

By Geo. E. Heron

THE MAJOR portion of sheet-metal cleaning is done by a hot water solution of cleaning material, generally using a material particularly prepared for the purpose, and a hot water rinse. I do not specify any particular brand of cleaning compound, feeling that the general statements will prove true in the case of any recognized commercial cleaning compound. Lye and ordinary raw chemicals have proved consistently to not give the results obtained by specially prepared materials, and the latter have grown extensively in use.

Of course, the author is familiar with the fact that acid "pickling" and "neutralizing" are done in quite a few cases; but labors under the impression that organizations using such methods have sufficient experience and talent at their disposal to use more complicated and exact methods of keeping "tab" on their work—since the class of work demanding such methods usually justifies the more costly precautions for checking them.

Typical Troubles

Quite frequently troubles develop in the finishing department, even after the second or third coat—troubles which defy definite tracing to their particular source. For instance, spots that fail to dry, places that give evidence of having oil under them and streaked marks showing through metallic pigments; for these troubles, various excuses are offered by the workmen, such as oil in the line, water in the line, failure to grind properly by paint manufacturer and others too numerous to mention.

Before going further, it might be well to state that I am not going to claim that all metal finishing troubles can be traced to the cleaning tank, nor that a "panacea" for every finishing ill is to be obtained by the correction of any fault in the tank, but I do feel safe in venturing the statement that, all things being equal,

the best place to start searching out the trouble is at the cleaning tank. Some of the inevitable upsets that appear in any finishing department can be fathomed more intelligently if systematic investigation is followed, even after you have cornered your trouble in the cleaning tank or at any other stage of the finishing.

Corrective Measures

These suggestions—a combination of the writer's practical experience and technical sources on cleaning problems—should provide places to start in correcting some cleaning troubles.

First: Make sure the solution in the cleaning tank and the water in the rinsing tank are boiling. The cleansing properties of materials perform best when boiling hot, and the rinsing is more thorough at the same temperature.

Second: Remember, too strong a solution can cause trouble as well as too weak a solution. This may seem unusual, but the fact is that the chemical nature of the cleaning demands a somewhat ideal combination of cleaning compound and water. I suggest the test of taking a half bucket of solution from the tank and diluting it with hot water, to see whether this will clean any small parts more effectively than the solution in the tank. If such proves the case, you have good evidence that the solution is too strong; whereas, if the diluted solution is not as effective, the addition of more material will certainly be required.

Third: After the final rinse, make sure the article being cleaned is "wiped down" with a clean dry rag since, during the course of a day's run, the cleaning solution carried over into the rinsing tank is sufficient to leave a deposit on the article, as it drys rapidly from the heat of the tank. This has been found to be especially true in its effect on metallic pigmented paints, such as gold and aluminum bronze.

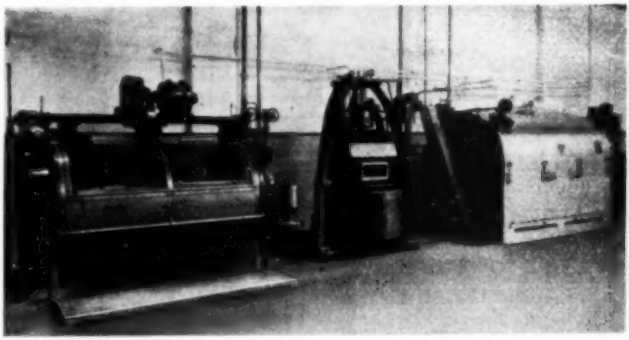
Fourth: Most Important! Attempt to have some methods of regularly testing and adjusting the strength of the solution in the cleaning tank. It has been suggested that a hydrometer be used for taking the specific gravity of a freshly made-up solution and that the solution be maintained at this specific gravity by regular additions of material. This reading must always be taken at the same temperature, because a difference of temperature will have a considerable effect on the hydrometer reading.

Test Cleaning Solutions

As I have stated, the hydrometer reading will give the specific gravity of the solution—which in a freshly made-up solution indicates effective material, but in an old solution it indicates not only effective material but also impurities and spent materials. Under normal operating conditions, long experience has proved that one-sixth of the initial charge added per week is sufficient to maintain a cleaning solution, and this is recommended as a reliable rule to follow.

If, for example, a solution containing six ounces per gallon is required to do your work when freshly made-up, the solution can be maintained at proper working strength over a period of several months by adding one ounce of cleaning material per gallon of solution each week. By following this rule the next time you make up your tank with a fresh solution, and by checking the spe-

This modern equipment cuts wiping rag costs!



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Get the facts. Have us tell you how much money you'll save when you use those wiping rags again and again. Or ask our specialists to call and talk matters over with you. Write.

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cific gravity of the solution with the hydrometer every week before additions are made, you will have a fairly reliable way of determining whether your solution is at correct strength.

Of course, the nature and amount of work put through a tank are important factors to be taken into consideration, therefore no hard and fast rule can be given to fit every specific case.

Note: The author will welcome any suggestions from others in the trade who feel they have some simpler or more effective means toward an end in this particular operation of industrial finishing.

Baked Crystallizing Finishing

Describing the crystallizing finish, explaining in detail the methods of application, and suggesting how to control the degree of crystallization, color, hardness, etc.

By C. Dan Youngs

ONE of the most beautiful materials in use today, and which is becoming more and more popular due to the varied and beautiful effects effected therewith, is the so-called crystallizing finish. The advent of the radio has had considerable to do with such popularity, yet it's use is not confined to that industry alone, for one sees it wherever a high-class type of finish is desired. Toys, gas and electric heaters, water heaters, cameras, adding machines and cash registers—all these and many more use crystal finish to a considerable extent.

There are two principal reasons why this type of finish is so popular. First, the ultimate buyer of the product is attracted by its beauty; second, and more important from a manufacturing standpoint, is the simplicity of its use in the finishing room. There is probably no other type of finish which does not depend for its success upon a well-applied and smoothly finished undercoat, but with the crystal finish this is of less importance to a marked degree.

Of course, the undercoat must have adherence, but any surface defects such as small runs or sags make no difference. Thus time is saved and it is seldom necessary to use more than one undercoat in the finishing operation. Defects in the undercoat are not apparent, as the uneven, variegated crystals in the finishing coat hide any irregularities which might be pronounced and unsightly in any other class of finish.

Controlled Crystallization

Several manufacturers of prominence make this type of finish, but there are few who make it so perfectly that the user can absolutely control the crystallizing to be obtained. Some such finishes show an uneven degree of gloss, irregular crystallization and such an apparent lack of uniformity that certain manufacturers using, or trying to use, this finish have given it up.

It is said, and probably with

Boston Industrial
Baking Enamels

These Enamels, which are made in a variety of colors, are intended to bake at a temperature of 250 degrees in from four to five hours. Thirty minutes after baking, they may be packed for shipment. They give a remarkably hard, durable finish; are tough and pliable and will give perfect satisfaction whether used on wood or metal.

There is another feature in connection with these Industrial Baking Enamels which is worthy of consideration and that is the fact that they are washable. Dirt can be removed from them with a damp cloth and the Enamels will shine with their original lustre.

On wood they can be used over our regular Fillers which are inexpensive, and on metal they can be used without any Filler at all, giving a solid, durable coating with one or two coats. They are waterproof and will resist the most severe handling.

If you are interested in these Enamels, we will be very glad to furnish you samples and give you instructions how to use them.

Boston Varnish Company

59 Everett Station **Boston, Mass.**

some degree of truth, that crystallizing finishes were discovered through the mistake of a plant chemist. He was trying to make a certain type of baking varnish and, through error, used the wrong kinds of oils or some other materials; on removing the test panels from the oven he was surprised to discover the crystalline effect.

With the readiness of American industry to grasp everything which might contain possibilities, the research department was immediately given the task of producing a crystallizing finish; as a result the idea, discovered by accident, was elaborated and improved upon. A vast amount of research was necessary. For example, the control of size and crystallization was difficult and, after a material was formulated which would crystallize, there was the most important feature of effecting the proper crystallization in such industrial plants as would use it.

Oven Control Necessary

It was found that complete oven control was imperative. A heat too high or too low would not crystallize; a coat too thin would not cover and would crystallize only in spots, and with a coat too heavy the crystals would be so large as to destroy the beauty of the finish.

Actual crystallization in a bake oven is obtained by the exclusion of as much oxygen as is possible, that is, just sufficient oxygen must be present to permit the gas flame to burn, and air pressure in the gas pipes must be reduced to a minimum. This lack of oxygen, together with the foul gases and fumes thrown off in the process of baking, is responsible for the crystallization of the finish. All vents, cracks, or other places where oxygen might enter must be tightly closed.

Each oven seems to have a different time and temperature at which crystallization can be effected. In some ovens, not over 90-deg. F. can be used; others will require as high as 175-deg. F. This, of course, depends greatly upon the differing types of materials—that is a finish made by one manufacturer will not work out the same as that made by another. It is always better to get the approximate time and temperature from the manufacturer, supplementing this information with practical tests of the oven to be used.

Colored Finishes, Too

One of the larger manufacturers of this type of finish now makes it in colored enamels, as well as clear. There is a certain advantage in this which can be readily seen. The finish coat, being the same color as the undercoat, gives greater hiding power and, in case of scratches or mars, there is no perceptible change in color. Then again, in cheap work, it is possible to get a good looking crystal finish with but one-coat work, thus saving the expense of two or three-coat work. Naturally, this is not as durable as two or three-coat work, but where a low cost finish is desired, what else can be expected?

Compared to Other Finishes

When properly applied and baked, crystallizing finishes are as hard as any other type of baked finish, with the possible exception of japans. It is equal in resistance to wear and tear to any other baked finish, and has the added advantage of greater beauty.

After the crystallization has taken place, which will vary from ten to 45 minutes, the vents of the oven are then opened, permitting the entrance of oxygen, and the heat is run up considerably higher for a period of two to three hours' which gives it the hardness mentioned above.

The proper type of crystal finish should need no reducer, but if it does, only a special reducer furnished by the same manufacturer should be used. While it is an oleoresinous product, the addition of turpentine or other popular reducing agent will affect the crystallization; in some cases there may be no crystallization at all. Should the material be too heavy to go through the spray gun, due to the cold, it is far better to heat it than to reduce it.

This type of finish should not be confused with the so-called crackle finish, as the latter is a nitro-cellulose product and the crackle is obtained through breaking of the film, which requires a second coat of lacquer to protect it. This is not so of crystallizing finishes, as the film is not broken to obtain the effect; rather it is wrinkled and gathered up in other various designs, but with no cracks or openings to expose the finish underneath.

Cleaning Metals to be Bake Finished

Referring to the article under the above title, beginning on page 117 of April issue, I wish to thank Mr. D. J. Benoliel of the International Chemical Co., for his comments on my article, "A High Class Baked Enamel Finish on Cast Metals," as published in the February issue.

As I occasionally present my views and experiences in the finishing line to the readers of INDUSTRIAL FINISHING, I also must be frank in stating that I occasionally learn from the writings of others about new methods and finishes, as published in this magazine. In this case I am glad to be informed of a new development in caustic cleaners, such as the "free rinsers" which remove all traces of caustic soda that might remain on the surface to be enameled, and cause trouble. Also the perfection of special cleaners for aluminum.

The cleaning with gasoline or benzine is a dangerous and expensive cleaning method and is fast becoming a thing of the past in the modern finishing department; it is being replaced by the use of caustic cleaners today.—C. S.

Gasoline and Benzine Out of Date for Cleaning

Mr. Mannhardt, in the April issue of INDUSTRIAL FINISHING, has written a very interesting article on "Baked White Enamel Jobs" (starting on page 105). However, the author neglected to write up modern cleaning methods. He has recommended the old time process of removing grease and dirt from metal with gasoline and benzine. Mr. Mannhardt even goes further. He suggests that the surface be actually wiped off with a rag.

As stated many times on these pages, such methods of cleaning belong to bygone days. Within the past few years, some few firms, such as the International Chemical Co., have developed special chemicals to remove grease, oils, and dirt from metals

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The Finishing Research Laboratories, Inc. offer a service which provides information that would take months or years to secure under actual conditions. These facts are obtained by scientific devices including "weathering" and "fading" machines and other laboratory equipment. Why take a chance on results when you can be *sure*? Send for complete information.

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before japanning and enameling.

Modern methods call for the following procedure: A cleaning solution should be made up in a steam or gas-heated iron or steel tank. The solution should be made up with water and a special chemical powder that is non-inflammable, non-explosive and is not dangerous. The cost of such a solution is approximately two cents per gallon.

To get best results, the articles to be cleaned are immersed in this solution for just a few moments, then removed and rinsed in clear, hot water. The surfaces are then chemically clean and ready for enameling.

By following this method, rejects are cut to practically nothing, cleaning is done on a production basis without necessitating hand wiping, costs are cut to bed rock and danger is eliminated.

Most of the large concerns in the United States, that do japanning and enameling on a production basis, now follow the above method. If any concern does not clean by the above method, it certainly will not be in a position to compete with the modern plant.—D. J. Benoliel, International Chemical Co.

Climbing the Ladder in the Finishing Department

I have been a reader of this magazine for the past three years, and as my memories drift back, I can recall this publication as being distributed to and read by executives and foremen finishers. Today we find INDUSTRIAL FINISHING is being read by employes in the finishing department, as well. This, however, has been a great help to the employe in developing

. . . keep your spray booths clean and sanitary and reduce fire hazard with

WILCO SPRAY BOOTH COATING

This new coating is a liquid which does not break down or settle out, and it needs no stirring or agitating. It can be applied with regular air equipment—with any make of spray gun—or it can be applied with an ordinary paint brush.

It is easily removed (bringing with it the residue deposited from the spraying) by the application of hot water with an ordinary garden hose, by the application of steam, or it can be peeled down with a wooden straight-edge scraper.

Wilco Spray Booth Coating makes it easy for the spray operator to keep his booth clean—and it is economical to use. Ask for sample and further particulars.

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New! CHEMICAL CARTRIDGE *Pulmosan* REG. U. S. PAT. OFF. *Respirator*

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"You may be using a cheap Shellac."

(Quoted from March Issue of INDUSTRIAL FINISHING)

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If you are finishing objects where you desire a heat resisting lacquer, we advise you to communicate with us for full particulars and samples.

SAMUEL H. FRENCH & CO.
Paint, Varnish and Lacquer Manufacturers
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Established 1844 Incorporated 1920

his knowledge in the finishing line, and fitting himself for the bigger and better positions.

Let us ask ourselves just how our foreman got to be foreman? To answer this question properly may require going back many years with our story. However, we find a great many of the men employed in the finishing department today have started without experience and have developed to a point where they can finish the particular class of work in the finishing department from the sanding operation through to the final spraying and polishing of the finish coat. In many cases, men of this type believe they are capable of handling the boss finisher's job very nicely, if given the opportunity.

Allow me to point out some of the requirements of the man at the head of the finishing department today; also some of the duties he is called upon to perform.

First of all, he must have a reasonably broad experience in the finishing line, which will qualify him to mix stains to match samples, if it be wood; he must also understand the action of various stains on different woods—whether oil, water or aniline stains should be used on a particular job. He also must understand some successful quick method whereby rush orders may be produced on short notice and, above all he must be the type of man that is willing to keep on learning about new materials and new methods, so that the company which employs him will benefit by his progressiveness as well as by his knowledge gained solely from experience.

I have pointed out these problems so as to enable the men in the finishing department to view

the boss finisher's position from a different angle other than the simple side.

I might also mention a word to the boss finisher in regard to starting new and inexperienced men on the right track at the start—which goes a long way toward his success in the finishing department—such as rules and regulations, performing duties properly, advantages of advancement, etc.

To the man that shows interest and has the "stick-to-it" power, there are opportunities. If your knowledge is limited in your particular finishing department, learn it thoroughly before seeking a broader field. It is poor policy to allow the attraction of handsome wages to interfere while you are attempting to broaden your knowledge in the finishing line. Experience is the foundation of success. Be the practical man who can actually do any job, instead of being the man who can only tell how it should be done.

The number of years employed in the finishing line doesn't help unless a broad knowledge and experience goes with it. Don't be satisfied with just being the man behind the gun. Try to be the man behind the man behind the gun.—C. S.

In Case of Fire

What would you do in case of fire?

One organization has a motto "Be Prepared." Would it not be an ideal motto for each and everyone in the finishing department? We all know that when fire starts in a finishing department, the first and most important thing is life. You can't do much at the time, but a piece of apparatus, a bench, or something else can be turned around or moved just a little so

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that when trouble starts everyone has a fair chance for safety.

Keep the way to the fire escapes and doors clear. Keep things orderly to aid production and for safety in an emergency. Just picture to yourself what might happen when a flash comes, and what could be done. It's the seconds that count, for these fires are in the midst of their feed.—Platt.

The Auto Refinishing Shop

(Continued from page 90)

Proper ventilation can be obtained by installing fresh air intakes in the windows and exhaust stacks on the opposite side of the room to draw out the foul air, as shown in the floor plan drawing. If possible, a row of steam pipes should be placed below the windows to heat the air as it is taken into the room.

The exhaust stacks should extend to within 12 or 14-in. of the floor because the fumes given off during the drying process are heavier than air and naturally settle to the floor. These stacks should extend about two feet above the roof and be equipped with revolving storm hoods to keep out the rain.

If the lacquer system is used it will not be necessary to have a special finishing room, since these materials dry very rapidly. However, it is necessary to have a spraying outfit.

Not many automobile refinishers do their own baked enamel work on fenders, lamps, etc., but if this is done it is necessary to have a small finishing room especially for this work. This equipment will include dip tanks, drain boards and oven.

Shop Heating

A suitable means should be provided for heating the shop dur-

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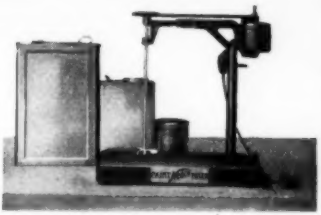

Mr. Painter, did you ever hunt around for a stick to stir your paint or lacquer?

Did you ever spend hours breaking up white lead?

Did you ever find color pigments settled in the bottom of the can and hard to mix?

Did you ever start a job and find the last color out of the can did not match the first?

Ever try to spray undercoats that were not thoroughly mixed with thinner?

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Do away with the old strongarm method of rubbing in wood fillers. You can do a better job with less effort with this machine.

Furnished floor type as illustrated or mounted on suspension base with adjustable tie rods. Arranged with cord switch and plug for operating from the lighting circuit.

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ing the night as well as the day. This is best done by means of steam or hot water, as coal or gas stoves are likely to give off dirt and fumes which would be detrimental to the finish while it is wet. The finishing room should have a uniform temperature of 70 to 80-deg. F., and under no consideration should finishing materials be applied when the temperature is below 70 deg. F.

The practice of finishing the closed-car roof in conventional black is a diminishing one.

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